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Bronze Age oasis settlements of Central Asia

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Typed name Richard H. Meadow

Date May 8, 1992

BRONZE AGE OASIS SETTLEMENTS OF CENTRAL ASIA

A thesis presented

by

Fredrik Talmage Hiebert

to

The Department of Anthropology

in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
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Bronze Age Oasis Settlements of Central Asia

Fredrik T. Hiebert

C.C.Lamberg-Karlovsky, Advisor

This thesis concerns the development of the Bactrian-Margiana Archaeological Complex (the BMAC), a late Bronze Age culture (ca. 2000 BC) in the desert oases of Central Asia. The results of collaborative Soviet-American excavations at one of the oasis sites, Gonur depe in Turkmenistan, are used to evaluate the large corpus of Soviet data concerning this culture. A Western chronological and methodological framework complemented that of the Soviets in their on-going fieldwork. My analysis included the study of ceramics, small finds, radiocarbon dates, stratigraphy, architecture, botanical, and faunal remains.

Soviet research in the Murgab River delta (ancient Margiana) has revealed a large area of late Bronze Age sites. This area can be divided into three linear groups of sites suggesting that settlement was organized along deltaic branches or canals in the oasis. My study of ceramics indicates only two periods of widespread occupation. Radiocarbon dates (2200-1800 B.C.) indicate that the region was contemporary with distant urban states. The culture of Margiana is indigenous, not derived from cultures with

similar styles as had been suggested by previous research.

The development of the oasis culture was a two stage process. The distinctive non-urban oasis architecture and subsistence economy was established in the first widespread occupation. The BMAC emerged only in the second period of occupation. BMAC style bronze seals, figurative axes, stone amulets, cylinder seals, and steatite and alabaster vessels were exported to Iran and the Indus valley, while few imports were found in Margiana. This large scale expansion may have been a factor in the collapse of urbanism on the Iranian plateau and in the Indus valley.

I conclude by evaluating the origins of the BMAC in the context of the Central Asian sequence and the reasons for its development. The emergence of the BMAC may be related to the consolidation of local political control in a pattern similar to later Central Asian khans.

CONTENTS

ACKNOWLEDGEMENTS

This dissertation was undertaken as preliminary attempt at combining many disparate traditions in archaeology-- Soviet, American, and western European-- in the study of a region which up until recently had remained terra incognita to much of the archaeological community. Such an undertaking could have been successful only as a part of a wide network of colleagues and institutions.

C.C. Lamberg-Karlovsky first suggested the area of Central Asia as an important arena for research. My research would not have been possible without his enthusiasm, encouragement, advice, and support. As director of the Harvard Central Asia archaeological project, he arranged financial and logistical support for my work. Our visit to Gonur depe in 1990 was a wonderful opportunity for me to see the site with new perspective.

This research program was made possible due to the encouragement and generosity of Viktor Ivanovich Sarianidi (Institute of Archaeology, Moscow), who allowed me to join his expedition and study the materials from his previous excavations. He proposed that I join his expedition when it seemed impossible. His courage in bringing about this project and his support of young scholars will never be forgotten.

My language training and research in the Soviet Union (1987, 1988-89) was sponsored by the International Relations

and Exchange Board (IREX). I was based at the Institute of Archaeology in Moscow, and at the Turkmen State University, in Ashkhabad, Turkmenistan. My official advisors in the Soviet Union were Professor Anagilide Gubaev of the Turkmen State University, and the late Academic Valeri Alexeev, former Director of the Institute of Archaeology, Moscow.

My fieldwork consisted of two seasons. Katherine Moore and I joined V.I.Sarianidi's team in the spring 1989 field campaign at Gonur depe. Kate conducted excavations, undertook field recording, and planned the recovery of environmental data at Gonur. Her participation in the project was supported by IREX. I would like to thank the members of the crew who assisted us in the excavations and who braved a fierce Karakum sand storm to fix the American tent when it blew down. I would especially like to thank L.Piankova for teaching me about Margiana ceramics, and O.Rosenthal for showing me how to find mud bricks where I could only see dirt. My second field season took place in the hot summer of 1989, at the kholkoz "50 Years of the Revolution". I would like to thank G. Koshelenko, who allowed me to excavate at Yaz depe, adjacent to his excavations at Gebekli. I would like to thank A. Lapshin, A. Bader, V. Gaibov (Institute of Archaeology, Moscow), and the students of Turkmen State University and Moscow State University who joined in the excavations at Yaz depe.

Additional support in Turkmenistan was provided by the

Ministry of Culture, Turkmenistan, the Institute of History and Archaeology of the Turkmen Academy of Sciences. I want to gratefully acknowledge two superb archaeologists based at the Academy of Sciences in Turkmenistan, I. Masimov and B. Udemuradov, who generously shared unpublished information with me. I would like to thank T. Khodzhanyazov, and A. Ganyalin, of Iu.T.A.K.E. for their assistance. I would especially like to thank Galina Paul and her family for their hospitality and generosity which they extended to me during my long stays in Ashkhabad.

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In France, J.-F. Jarrige, director of the Musee Guimee, and H.P. Francfort allowed me to work in the laboratory of the URA 10 and to study the field reports from Mehrgarh and Sibri. S. Cleuziou showed me the study collections from Tureng tepe. I would like to thank Bertrand Bouchet of

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Richard Frye and Oleg Grabar have been enthusiastic supporters of this research in Turkmenistan, even when it seemed unlikely that it would occur. I also would like to thank Philip Kohl for his support, encouragement, and expertise in the archaeology of Central Asia. Richard Meadow has offered tremendous enthusiasm for collaborative research in Central Asia, as well as meticulous attention to this dissertation.

The Peabody Museum, the Department of Anthropology at Harvard University and the American Schools of Prehistoric Research provided financial support for many aspects of this

research.

My doctoral committee, C.C. Lamberg-Karlovsky, Kwang-chih Chang and Richard H. Meadow provided guidance and support throughout the research and writing of this thesis. They greatly influenced my intellectual perspectives, the contributions of each are reflected in this thesis.

Note on translations and transliterations

In several places in this dissertation I use Russian or Turkmen Turkish vocabulary (both which use the Cyrillic alphabet) for specific archaeological forms and features rather than translating these into English. This allows the reader to most accurately compare this work with that of other published sources. The transliteration system used in the text and in the bibliography is based on the system recommended by the U.S.Board on Geographic Names. I am consistent with Russian usage in the formation of plurals, for example, *khomcha* (singular) becomes *khomchi* (plural). This transliteration system is consistent with Kohl (1984). For example, the name of the archaeologist Хлопин , is Khlopin, and not Hlopin, Klopin, Chlopin or Xlopin. The journal Советская Археология is Sovetskaya Arkheologiya, and not Sovetskaja Archeologija or Sovetskai͡a Arkheologii͡a.

CHAPTER I

INTRODUCTION

In the heart of the Karakum desert of Central Asia, surrounded by vast tracts of sand dunes, lie the remains of a sophisticated Bronze Age civilization, with a settlement and economic structure different from its Near Eastern and South Asian neighbors. This area is the source of finely made and distinctive artifacts that have been found throughout the greater Near East. The origins and development of the oasis culture in the Murgab River delta is the focus of this study.

The Bronze age culture of Margiana was first described as the Margiana variant of the Namazga VI culture (Masson 1959). Soviet investigators discovered a related culture in southern Uzbekistan and northern Afghanistan during late 1960s and early 1970s and labeled it the Bronze age Bactrian civilization (Sarianidi 1977, Askarov 1977).

In attempts to distinguish the Bronze age cultures in the oases areas from that of the foothill region, there has been a tendency to rename the oasis assemblage. Francfort (1989) refers to the Bronze Age cultures of Bactria and Margiana as "the Oxus civilization" (1989:401,409). Often Margiana is included under the name "Bactrian civilization"

(Ligabue and Salvatori 1989). Recently, the period of settlement in Margiana and Bactria with its distinctive small find assemblage has been called the Bactrian-Margiana Archaeological Complex (Sarianidi 1987b).

The Bactrian-Margiana Archaeological Complex is an assemblage of distinctive artifacts which include carved stone objects, metal objects, and seals with zoomorphic, anthropomorphic and geometric designs that co-occur with ceramics of the "Central Asian type". In Bactria and Margiana, the assemblage is found in the context of a new form of architecture and settlement pattern. Prior to the investigations in this area, the Margiana-Bactria style objects were known primarily from isolated contexts in eastern Iran and north-western South Asia.

The archaeology of Margiana has been tied into the Kopet dag foothill chronological framework based on the original Soviet excavations at Namazga depe in the late 1950s. The rapid occupation of sites in the Murgab delta oasis was contemporary with the late Namazga V settlement in the foothill region, which was the period of largest urban settlement at the site of Altyn depe (Udemuradov 1989). Large building complexes surrounded by thick walls have been uncovered at many sites in Margiana. The origins and development of the Bronze Age sites in the Murgab delta have remained elusive due to the Soviet emphasis on wide scale horizontal exposure of rooms at the expense of analysis of

room function and chronology.

Of prime importance has been the association of the monumental architecture in Margiana with numerous miniature stone columns, steatite bowls, bronze seals, and stone amulets. None of the materials of these objects are locally available, yet they have a style distinctive to the desert oases of Margiana and Bactria. These excavations have provided the first known cultural context for the Bactria-Margiana Archaeological Complex. Viktor Sarianidi, who excavated Togolok-21, has interpreted this building complex as an Indo-Iranian temple with fire altars and remains of the ancient ritual drink haoma, suggested by finds of ephedra and opium poppy there (Sarianidi 1990). He has suggested that this distinctive culture is the result of migrations from Iran and Mesopotamia dating to the later second millennium.

My thesis in this study is that the Bactrian-Margiana Archaeological Complex developed from local traditions at the beginning of the second millennium. In contrast to sources for the Bactrian-Margiana Archaeological complex that have been proposed previously, I show that this development does not result from migrations from Iran, South Asia, or Mesopotamia, nor from the sedentarisation of nomads.

Goals of this study

For more than fifty years, Soviet researchers have investigated the archaeology of pre-Islamic Central Asia. The local development of prehistoric cultures in modern Turkmenistan, Uzbekistan and Tadjikistan included a Neolithic development of agriculture and, later, development of complex irrigation systems, urbanism and highly complex production and trade networks by which this area was integrated into the greater Near Eastern and South Asian worlds.

Most of this research was carried out by Soviet archaeologists working separately from their western counterparts, using different theoretical frameworks, having different goals, and often using different methods of research.

This study is based upon collaborative excavations conducted by V.Sarianidi and myself at the Bronze age site of Gonur depe in Margiana. The diverse geography and natural resources of Central Asia form a framework for the pattern of human settlement. In this chapter, I outline the specific ecology and natural resources of the Murgab River delta, where Margiana is located, in the context of the Bronze Age oasis. The differential development of cultures in the areas of oasis and foothill is in part due to this diversity of environments.

In Chapter 2 I describe the Bronze Age sites of

Margiana- the site distributions and brief summaries of the sites. Many of these sites, even those which have been excavated, have not been fully published or have been published in reports only distributed in Turkmenistan. I had a chance to visit many sites during the excavations at Gonur, allowing me to take radiocarbon samples and to observe the phasing of the architecture. The archaeological context of these sites is special, in that very little post-Bronze Age occupation is found in the area. The Bronze Age architectural remains are preserved just below the surface. The area is highly deflated leaving little more than the ground plan and a small amount of deposit just above the floors. These have been cleared over wide areas exposing entire building complexes.

I present the results of excavations at the best preserved of the Margiana Bronze Age sites- Gonur depe. The 1989 spring field season was a collaborative project with Viktor Sarianidi. As a group our team consisted of 12 people. None of us knew what 'collaboration' would entail, but as it became clear that our methods were dissimilar, there was not a problem with overlap of research. Katherine Moore conducted most of the fine scale excavations and did a preliminary study of the faunal material from the 1989 season. She also studied the faunal material from previous seasons which remained in the field at each site. Along with K.Moore, two crew members ably assisted us in the

excavations of a stratigraphic sounding (Chapter 3) and the other excavations. This sounding is the basis for the stratigraphy, and the study of ceramics, small finds, radiocarbon and floral material.

Questions of the origins of the Margiana Bronze age culture, and variation between the various Margiana sites is addressed in the study of the ceramics (Chapter 4). The ceramics are the key to the relative chronology, and are one important data base for the study of local and regional exchange. Ceramics from the various regions of Central Asia were studied in the reserves of the Institutes of Archaeology in Moscow, Leningrad, Ashkhabad and Samarkand. I also was kindly shown collections of related materials from Hissar (Philadelphia), Tureng depe (Institute of Art, Paris), Mehrgarh and Sibri (Musee Guimet, Paris), as well as Tepe Yayha, and Khurab (Peabody Museum, Harvard). The absolute chronology (Chapter 5) is based primarily on a new series of radiocarbon dates, which came form the Margiana excavations, both from my own excavations at Gonur, and from the previous excavations. The previous radiocarbon dates from Margiana and from other areas of Central Asia, have provided unsatisfactory results for the archaeologists. To fully understand the nature of variation radiocarbon dating I worked for several weeks in the Geochron Radiocarbon Laboratory analyzing samples before I went into the field. Within the limitations of the technique, Margiana

radiocarbon dates provide an absolute time period of the formation and development of this Bronze Age region.

In Chapters 6 and 7, I present the results of fieldwork conducted on the earliest architecture at Gonur depe. Most of the excavations in Margiana have focused upon the monumental architecture or large building complexes interpreted as palaces and temples. Excavations of non-monumental, domestic architecture provides a contrast to the monumental architecture. Domestic architecture excavation was conducted by myself, Moore and O.Markovich with assistance of one shoveler.

Chapter 8 and 9 concern the development of the Margiana Bronze age economy based upon analysis of materials from the excavations at Gonur and materials from other sites in Margiana provided by both V.Sarianidi and E.Masimov. The description of the oasis domestic economy is based upon the archeobotanical and archaeozoological analyses from the 1989 field season at Gonur (Chapter 8).

Chapter 9 concerns the development of the oasis assemblage of non-ceramic artifacts (small finds) which form a homogeneous assemblage over the areas of both Margiana and Bactria- described here as the Bactrian-Margiana Archaeological Complex (BMAC). This region developed its own artistic tradition on stone and metal artifacts despite the lack of the natural resources upon which they were made. The uniformity of material culture is found in Margiana at

Period 2 sites (Togolok-21, Togolok-24 burials), in Bactria (Sapalli and Dashli 3), and at sites well outside of Central Asia in Iran and Baluchistan. The distribution of this archaeological assemblage in Margiana is extensive and uniform.

In conclusion, the development of oasis settlements in Margiana must be seen in the context of the Bronze Age traditions of Central Asia as a whole. The oasis settlements of Margiana are part of the long local development of culture in Southern Turkmenistan as documented in the Namazga ceramic sequence and a direct outgrowth of it. Adaptation to the oasis is the explanation for the development of the distinctive nature of the architecture, settlement and production.

REGION OF STUDY

Central Asia is bounded on the west by the Caspian Sea, on the south by the Kopet dag and the Parapamisus mountains, on the north by the vast steppes of Kazakhstan, and on the east by the plain and valleys rising up to the Pamirs. The mountains form a "U" around the large desert basin (Figure 1.1). Rivers from the southwest, southeast and east flow into this undrained basin. Many distinct environments are contained within this region, and the region is culturally diverse as well.

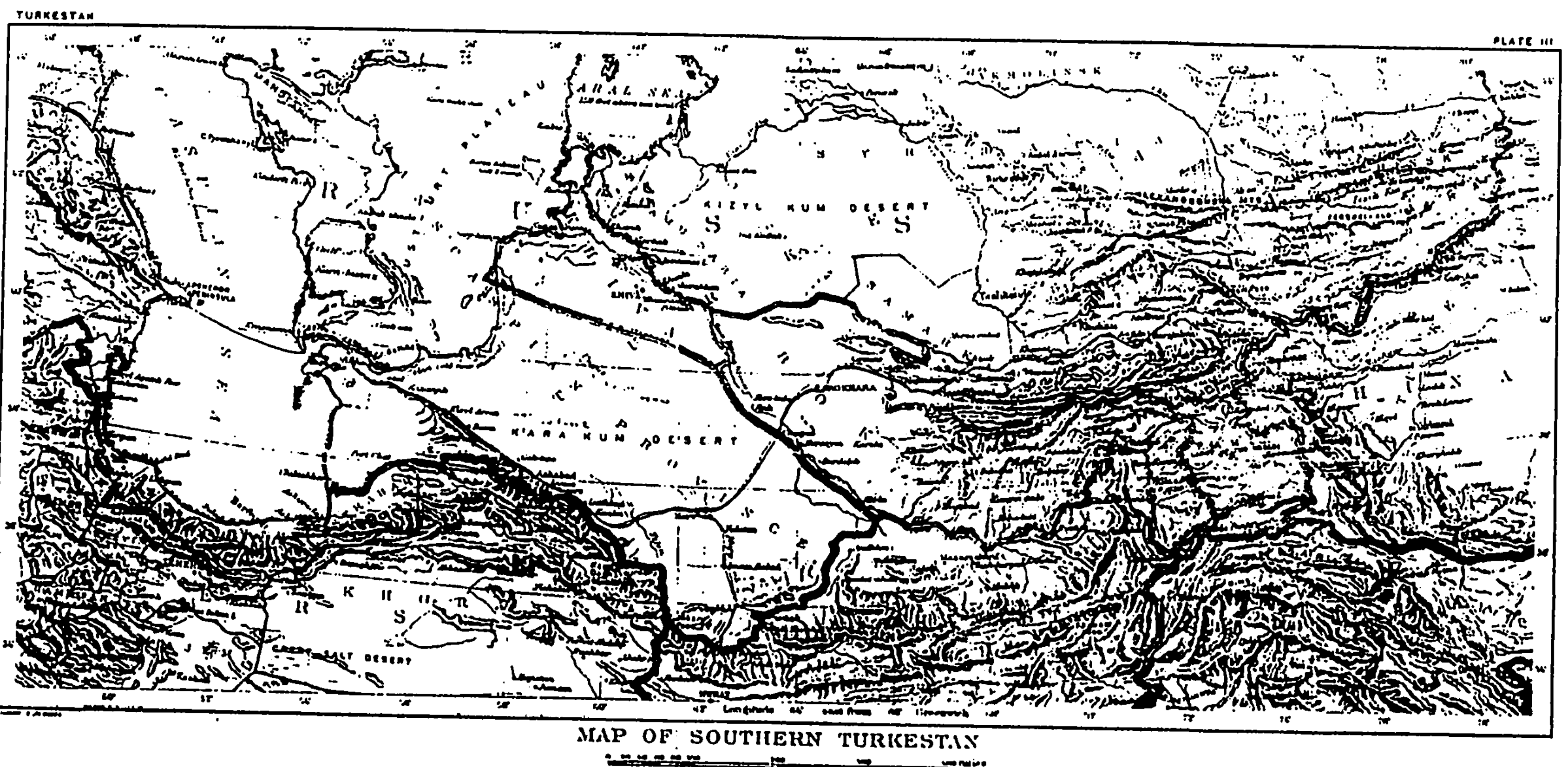


Figure 1.1: 'Region of Study': Central Asia as illustrated in the pre-Soviet period (Pumpelly 1908).

CULTURAL GEOGRAPHY

The modern political entities of Turkmenistan, Uzbekistan, and Tadjikistan do not reflect the traditional cultural units of Central Asia. "Turkmenistan" and "Turkmenia" are interchangeable and refer to the modern Republic. The artificial nature of the present borders is important, since most Soviet research was carried out through the auspices of the former republics' Academies of Sciences. Typically, researchers who had access to one Republic did not have access to sites or information from the other Republics, and thus they have been constrained by the modern political borders for their research. "Turkestan" and "Trans-Caspia" are synonyms for Central Asia that were primarily used prior to the Soviet period. The term "Western Turkestan" has been employed in an attempt to define the natural boundaries and is synonymous with my use of "Central Asia" (Kohl 1984:25).

The Murgab River is associated with the cities and settlements of its delta: modern Mari (or Mary), medieval Merv and classical Margiana (Margiane [the region] or Margus [the river]). To the north of the medieval and classical oasis is the former delta which is today covered by the sands of the Kara kum desert. This is the area of Bronze Age settlement typically called "Bronze Age Margiana" (Figure 1.2). It is located in an area 38 00'south, 38 80'north, by 61 36'east, 62 12'west, that is, 100 kilometers north-south

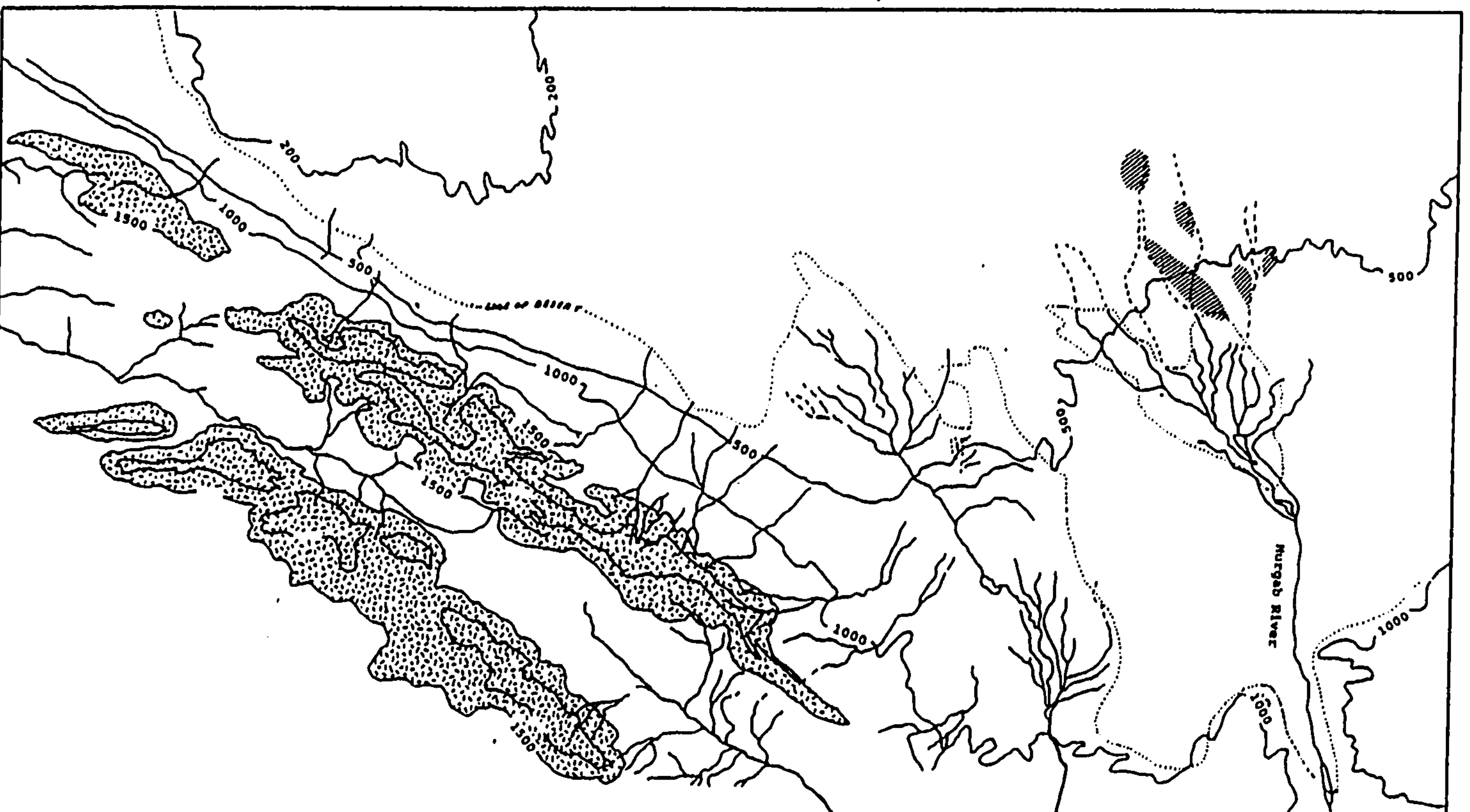


Figure 1.2: Kopet dag foothill zone and Margiana. Areas above 1500 m are hatched. Dry farming foothill sites are located along the rivers at the 1000 meters level. Dotted line indicates the modern (1950) edge of the desert. Dashed ends of rivers indicates modern extensions of canals. Diagonal lines are the areas of Bronze Age sites in Margiana.

by 50 kilometers east-west at its largest and widest point. It is almost five times larger than the medieval and classical oasis to the south. While there is occupational continuity between the Bronze Age and the Classical period in the Murgab delta oasis, the use of the name Margiana does not imply linguistic or cultural continuity from the Bronze Age to the Classical period. No identification of this area in the Mesopotamian texts has yet been made.

The basic element of the name is found in Old Avestan "Moury-" in Old Persian "Marghu", Middle Persian "Marv", and Arabic "Marwazi" (Encyclopedia of Islam 1987). Although it has commonly been affirmed that Margiana is listed on the 7th century BC Behistun inscription of Darius, it is not true. In 1938, W.W. Tarn noted that the name "Margus" did not occur in any of Darius' lists of provinces (1951 2nd ed.:88 note 6). The name "Margiane", according to Tarn, is later in date, probably from the Seleucid eparchy around 100 AD. It is possible that the name of the river originally came from elsewhere, possibly related to the "Marhashi" of Elam, which Steinkeller has convincingly argued should be located in eastern Iran, south of Iranian Khorasan (Steinkeller 1989). The Bronze Age Central Asia cultures are considered to be proto-historic, having no written documents at a time when neighboring cultures to the south did have writing.

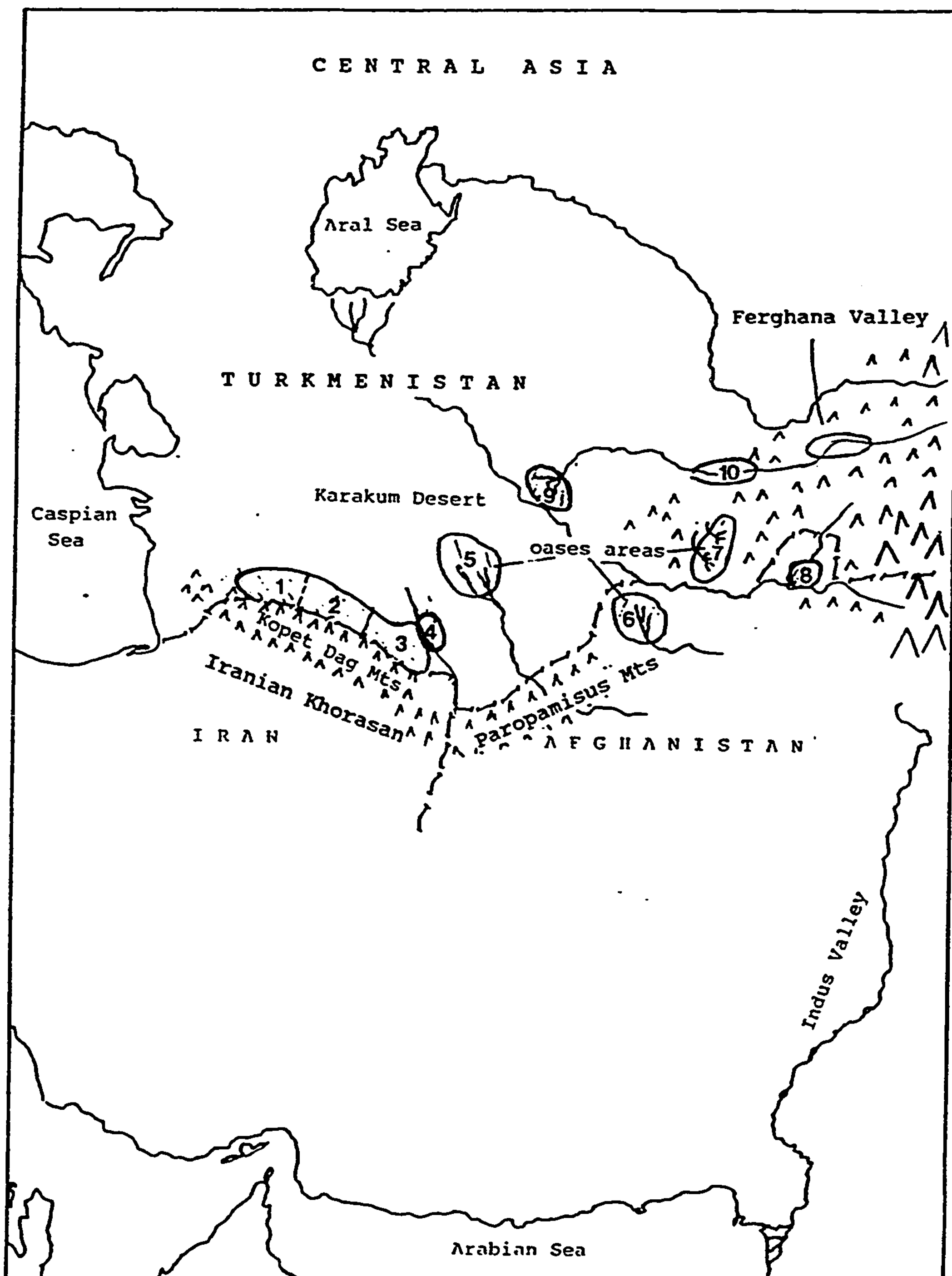
The major areas of Bronze Age settlement of Central Asia

that are discussed in this thesis are located in the following regions. The regions are located by number on Figure 1.3.

The foothill zone

The band of small river valleys along the northern foothill of the Kopet Dag mountains is referred to by various synonymous names: the foothill belt or zone, (Masson 1988), "piedmont region" (Kohl 1984), and sometimes simply "southwestern Turkmenistan" (Gupta 1979). The foothill region of the Kopet Dag mountains forms three Bronze Age cultural areas (as numbered on the map, Figure 1.3): the western foothill zone (1) including the important archaeological sites of Anau and Ak-depe; the Central Kopet dag foothill zone (2) including the sites of Namazga depe and Shor depe); the eastern foothill zone (3) including the sites of Ulug depe and Altyn depe (Kohl 1984). All of the sites in these regions are at or around 1000 meters. Ridges and desert plains form natural barriers between the river valleys where the sites are located.

The Geoksyur oasis forms a fourth 'foothill' zone. This region is contiguous with the eastern Kopet dag foothill area, but the sites are located out in the delta of the Tedjen River rather than at an elevation of 1000 m along the foothill zone.



1.Western Kopet Dag foothill zone
2.Central Kopet Dag foothill zone
3.Eastern Kopet Dag foothill zone
4.Geoksyur Delta of Tedjen River
5.Murgab delta Oasis (Margiana)
6.Southern Bactria (Dashly oasis)
7.Northern Bactria ((Sapalli/Djarkutan)
8.Eastern Bactria (Shortughai)
9.Bukhara oasis (Zamanbaba)
10.Upper Zerafshan (Sarazm)

Figure 1.3: Important Bronze Age cultural zones of Central Asia.

The Desert Oases

Five oases areas are known to have had contemporary late Bronze Age settlements (as numbered on the map, Figure 1.3):

Margiana (5), in the Murgab River delta is actually quite isolated from the other Central Asian oases. "Southern Bactria" (6) is located along the ancient delta of the Balkhab River in northern Afghanistan, where the sites form two clusters referred to as the Dashli and Farukabad oases. "Northern Bactria" (7) is the deltaic oasis of the Sherabad River, north of the Amu Darya in Uzbekistan. "Eastern Bactria" (8) is a group of Bronze Age sites located in an oasis-like area on the south-eastern border of Central Asia. Here, at the site of Shortughai, late Bronze Age Central Asian levels overlie the remains of a mature Harappan "outpost". The "Zamanbaba" deltaic fan (9) of the Zerafshan River ends in an oasis where the poorly explored Bronze Age Zamanbaba sites are located. These areas are divided by formidable tracts of sandy desert, and the rivers of the oases come from vastly different mountain areas; yet, they shared strong cultural traditions during the late Bronze Age.

The following regions (not numbered on the map) are part of the regional context:

Mountain valleys

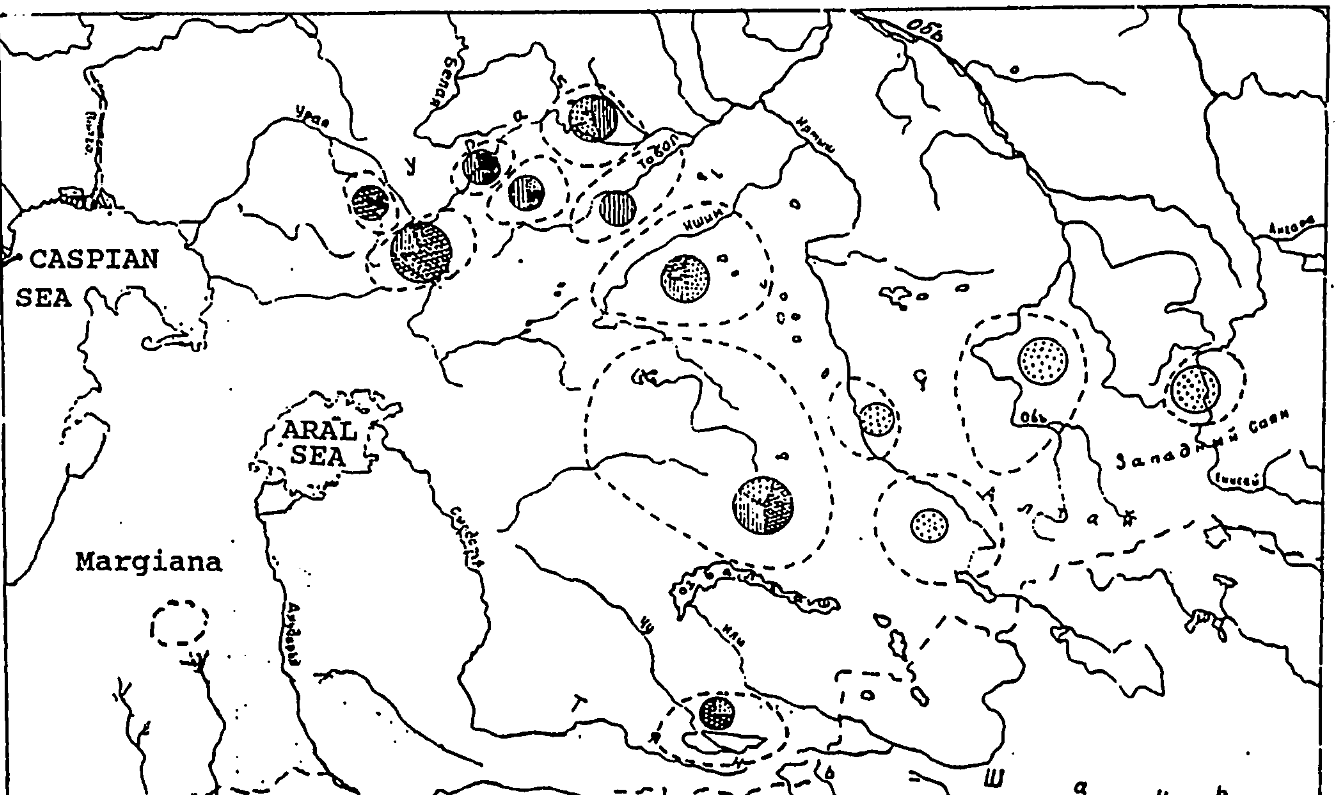
Several Central Asian Bronze Age settlements contemporary with Margiana are located in valleys above 1000

m. These are found in the Upper Zerafshan valley, the Ferghana valley in Uzbekistan, and the Sumbar valley in western Turkmenistan.

Sarazm, in the upper Zerafshan valley, has late eneolithic and early Bronze Age finds strikingly similar to those from the foothill zone of southern Turkmenistan. The Bronze Age of the Ferghana valley is practically unexplored, however, it may have had important links to Singkiang during the Bronze Age.

Steppe regions to the north

To the north and to the west of the desert areas, nomadic burials and encampments are found which are called the "Andronovo steppe culture" of the Bronze Age. Distinctive pottery is found in a widely distributed area (Figure 1.4), and some of it is found on the sites of Margiana (Sarianidi 1975) and has been recently been recovered from stratigraphic context (see Chapter 4). Andronovo burials are found in the both in the mountainous areas of Tadjikistan and to the north in the region just to the south of the Aral Sea (pre-Aral region).



- Alakul
- Federovo
- Other
- Regional distribution

Figure 1.4: Distribution of Andronovo ceramic types (adapted from Kuzmina 1986: Figure 8).

Contact areas outside of Central Asia

Areas to the southeast of the Kopet dag are also important to place in geographic perspective (figure 1.5). People and objects passed between the Indus Valley and Central Asia through natural passes such as the Bolan Pass, in Baluchistan. At the sites of Mehrgarh, Nausharo and Sibri, objects morphologically identical to those of the BMAC document the direct interaction between the cultures of the greater Indus Valley and Central Asia (Jarrige 1988). While the Indus civilization extended to the mountain edge of modern Afghanistan at Shortughai (Francfort 1989), most contacts with the Central Asian oasis cultures occurred via the Kacchi Plain to the south Indus valley sites.

The Iranian plateau and Central Asia have separate cultural traditions which date to before the Bronze Age. Through time these areas maintain their own identity while being in contact through trade or other forms of exchange. Khorasan borders the Iranian plateau south of the Kopet dag. The Gorgan plain is linked to Turkmenistan via a narrow corridor near to the Caspian. Further south, Bronze Age sites in Seistan and Kerman also had connections with Central Asian cultures.



Figure 1.5: The Indo-Iranian lands: Bronze Age sites of the Iranian plateau and the Indus valley.

PALEOCLIMATE

Whether climate has changed in the last 10,000 years has been a topic of interest in Central Asian archaeology for nearly 100 years, starting with the work of Pumpelly and Huntington at Anau (Pumpelly 1908), and it remains an important unresolved question. In Figure 1.2, the hatched area is the location of the Bronze Age Margiana sites. The dotted line around the delta indicates the modern desert/oasis boundary. Today this latter area has been expanded by irrigation waters from the Kara Kum canal. However, prior to the construction of the canal this boundary between desert and fields irrigated by the Murgab was discrete (Pumpelly 1908, O'Donovan 1882). While the Bronze Age sites fall outside of the modern area of oasis, former river beds and irrigation canals associated with the settlements have been found indicating that this was the region of the ancient Murgab River delta.

Lisitsina (1978) and Gerasimov (1978) consider that the arid desert environment has been stable over the last 10-15,000 years. Gerasimov attributes the abandonment of these Margiana sites to shifts in the river systems. The instability of the river channels was caused by tectonic uplifts and other geomorphic processes. There is considerable evidence of tectonic instability in the area, and the Murgab delta oasis is exactly along a major fault

line. In addition, the water course of the Murgab was unstable due to the gradual build-up of alluvial debris and blockage of the channels. The Murgab flows above plain on an aggraded river course as it approaches the deltaic area (Suslov 1961:468-9), and dramatic shifts in the river channel are historically attested (Davis 1905:55).

On the other hand, Dolukhanov has argued for a desiccation of the environment during the last 4 thousand years (1988). Large tracts of takyr in a band stretching along the mountain foothills suggest greater water discharge for the rivers in the past.

Whether or not the environment was wetter during the Bronze Age, this apparently did not alter the oasis-desert relationship which we see in the modern oasis of Murgab delta (Merv). Preliminary ethnobotanical data from the Bronze Age settlements (Lisitsina 1968, Yaneshevich 1977, and Miller 1991) include xerophytic and halophytic plants similar to the flora surrounding the oasis rather than to a different type of environment (steppe, or forested). The lessening of rainfall may have been important for dry farming along the foothills, but it was not a major factor in the ability of the oasis to be inhabited. The present relationship of the regions to each other is thus a justifiable analogy for the Bronze Age. If environmental change is considered to be a factor bringing about the end of occupation in Bronze Age Margiana, the archaeological

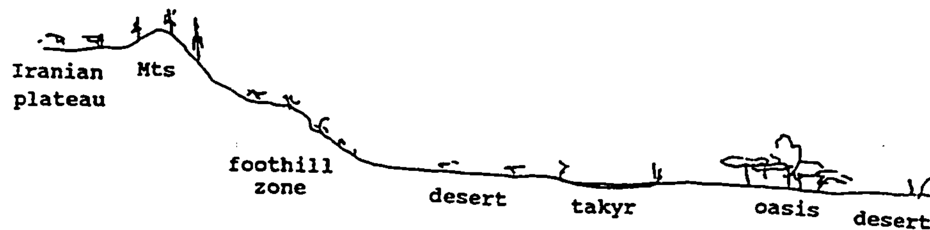
evidence would suggest (Chapter 7), if anything, a catastrophic, rather than a gradual change.

THE ENVIRONMENTAL GEOGRAPHY

Rivers

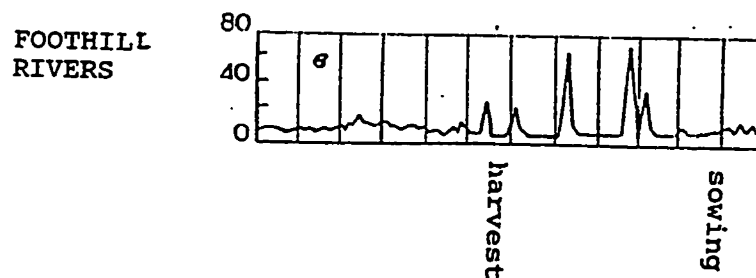
The rivers which flow into the desert from mountain ranges bordering the desert areas have different regimes (Figure 1.6, schematic section). The Amu Darya and the Syr Darya from the Pamirs are large snow- and rain-fed rivers that have stable year-round flow, carrying rich loess deposits good for farming. These deposits are deeply down cut, however, and required large canals for irrigation. The rivers flowing from the Kopet dag are small and rain-fed, thus the amount of water flowing is very small compared to the Amu Darya and Syr Darya, but more constant throughout the year. These rivers are easily diverted for watering fields and the early village settlements in the foothills of the Kopet dag clustered along these rivers (Figure 1.6a).

The Murgab receives water from snow run off in the Parapamisus mountains of Afghanistan. The watershed is located from 1400-3800 meters in elevation; thus the discharge is uneven, with flooding in May-June when the snow melts. It is not a big river, draining 46,900 square km and thus has a highly seasonal discharge (Kirsta 1980) (Figure 1.6b). I emphasize the difference in the river regimes, because it makes an enormous difference in human adaptation.

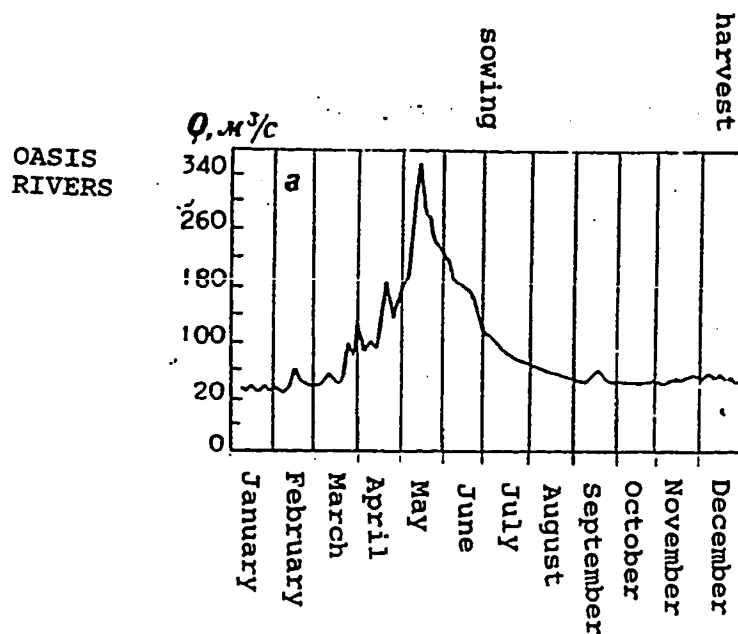


A) Schematic environmental cross-section of enivroments of Central Asia.

FOOTHILL RIVERS



OASIS RIVERS



Charts of the discharge of the rivers of Turkmenistan

B) Atrek River (1942), C) Murgab River (1939).
River regimes (Kirsta 1980, fig 3)
Agricultural data (Lisitsina 1968, Suslov 1961)

Figure 1.6 Ecological variation in Central Asia

The seasons of traditional sowing and harvesting of crops are dependant upon periods of high water flow (flooding), and thus, the agricultural seasons are reversed (Suslov 1961).

The Murgab River bed upstream is deeply downcut and is surrounded by harsh desert sands. Bronze Age burials at the base of the mountains where the Murgab meets the desert suggest that the river served as a communication route despite the fact that the deeply downcut areas could not support agriculture (Udemuradov 1989).

Natural delta environment

Along the natural deltaic ends of the rivers are "tugai" forests. These form a narrow broken belt along the edges of the river bed as it flows along the plain and spreads out in the delta.

The tugai vegetation is not diverse, but has a dense woody canopy of Euphrates poplar (Populus pruinosa) and wild olive (Elaeagnus angustifolia); willow (Salix wilhelmsiana), tamarisk (Tamarix sp.) and smaller shrubs form an impenetrable thicket below (Walter and Box 1983:95-7, Suslov 1961:508). The woods have little economic importance but are important for retaining the water. Some of the wood could be burned. The fauna include boar, Bukhara deer, Turan tiger, swamp lynx, rabbits, water rats, mice and many birds, amphibians and reptiles.

The *tugai* forest made simple occupation of the delta difficult. Canals had to be cut for the delta to be turned into an oasis. These canals needed to be maintained or they would have been quickly clogged by thicket, which is what is happening today in the modern oasis of Mary. Similar deltaic environments are found in Iran and Baluchistan near the sites of Shahr-i Sokhta and Khurab for example (Nyerges 1982) and along the deserts of Central Asia from the Kopet dag eastward to Sinkiang (Figure 1.7). These deltaic environments were all potentially highly productive when transformed into oases such as Margiana.

The oasis

The primary emphasis of this study is on the oasis areas of the Murgab delta. The oasis environment is created by cutting the thickets along the delta and diverting the watercourses. The oases have more rainfall, higher humidity, and a more moderate climate than natural delta (Suslov 1961). Beyond the oasis, the desert climate is arid and sharply continental with quickly changing seasonal and daily fluctuations of temperatures.

Productive agricultural lands are formed from the rich alluvium suspended in irrigation water. The alluvial layer ranges up to 12 feet deep in the contemporary Murgab oasis, and may have been deeper in the ancient oases, since the humus layers have been partly eroded through deflation (Suslov 1961:510).

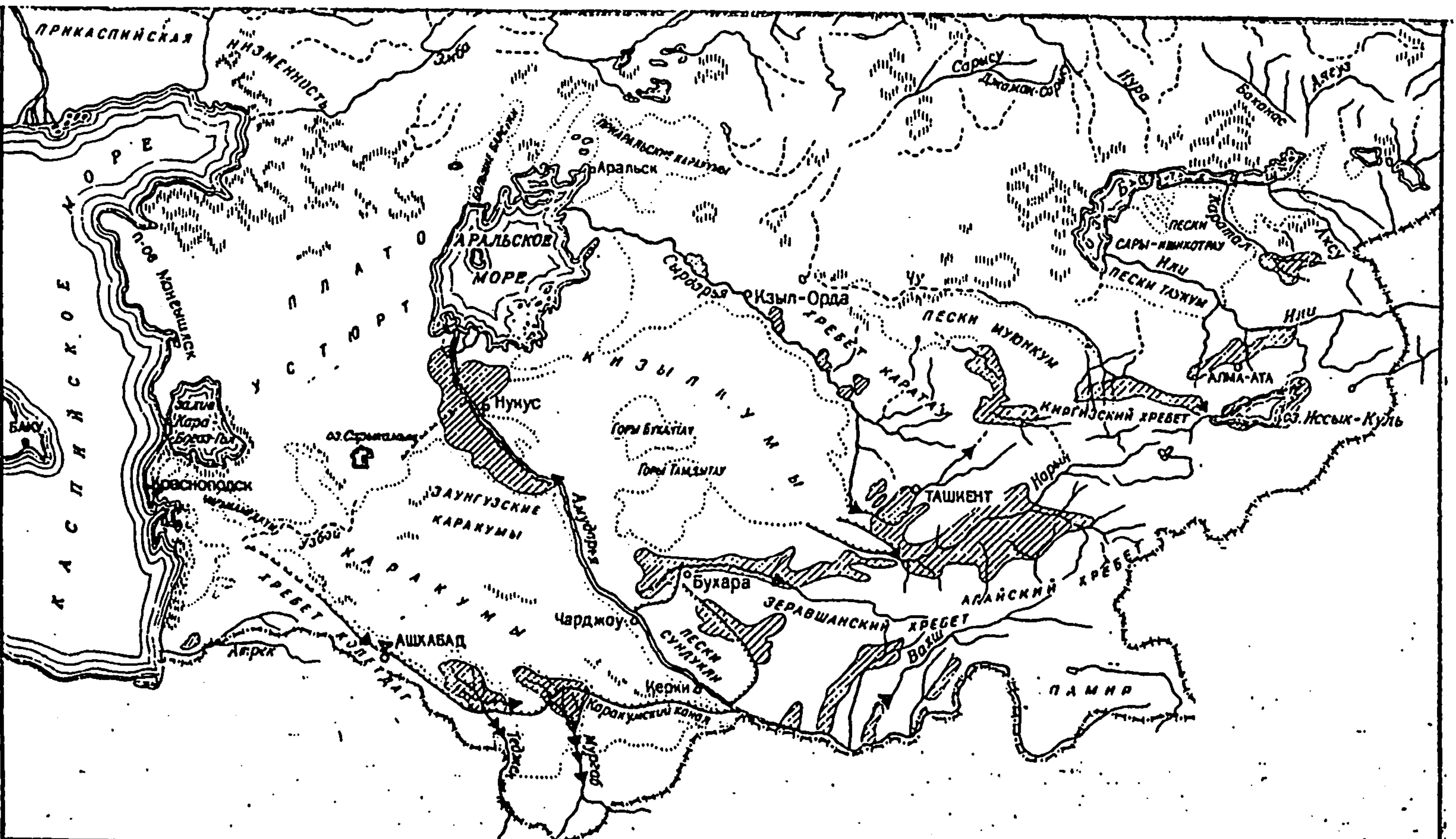


Figure 1.7: Schematic map of the desertic deltas of Central Asia (hatched areas): (Kirsta 1980, fig 1, after M.P.Petrov).

Annual precipitation can fluctuate from 1.8 to 5.8 inches a year at Merv, inadequate for dry farming. Unlike in the dry farming region of the Kopet dag foothills, traditionally, barley crops in Margiana were sown in the summer and harvested in the winter, as dictated by the period of high water (Suslov 1961). The high temperatures and the intense sunlight in the oasis aid in ripening the late harvested (December) fruits and grains. Today, a massive dam south of Mary regulates the flow of the waters to the Murgab delta.

Today, wells in the Murgab delta are 1-3 meters deep; on the periphery, in the sandy part of the desert, the wells are generally 3-8 meters deep (Encyclopedia of Turkmenistan 1984:59). Along the exterior edges of the agricultural lands in the oases are found reedy marshes originating from the cast off water of irrigation overflow. The vegetation is salt adapted, but have economically important stands of reeds (Phragmites communis) and saxaul (Halaxyon sp.).

Clayey basins (Takyr)

Surrounding the irrigated oasis areas are barren stretches of clay pans (called takyr) formed by earlier periods of standing water. They have both clay and gypsum deposits which were previously economically important. Takyrs become vegetated when inundated with water from the run off of spring rain. These basins serve as seasonal

(springtime) storage places for water where temporary wells are dug. they have a distinctive flora and fauna which attracts predatory and grazing animals. They provide important resources in the form of seasonal plants and animals in the desert for caravans, herders and travelers. A zone of takyri are located outside of the Tedjen and Murgab River deltas, along the Amu-Darya and Syr-Darya, and around the oases of northern Bactria. A zone of these clayey basins extends 20 to 24 miles out into the desert beyond the Kopet dag foothills and most likely indicates a region of ancient deltas which may hold rich archaeological materials but are unexplored (Kohl pers. comm.).

Deserts

The desert itself is a mosaic of moving barchan dunes, stable dunes, scattered takyri, salt flats and isolated wells stretching out from the foothill of the Kara kum and Parapamisus mountains.

White saxaul (Halaxyon), ephedra (Ephedra strobilacea) and Eremosparton are shrubby tree species found in the desert. Traditionally, the desert saxaul is collected for firewood from stands hundreds of kilometers from the oasis. The desert is covered by spring vegetation following the slightest precipitation except for the barchan dunes. The thin veneer of annual vegetation provides fodder for herders and nomads, but requires a high degree of mobility. Many

areas of the Kara kum appear carpeted with red due to the annual poppy (Papaveraceae), which may have also been collected for its narcotic qualities.

Two types of dunes characterize the sandy parts of the Kara-kum: Barchan ridges of moving sand dunes and stable dunes, upon which vegetation can develop. The sandy ridges are oriented north-south, facilitating the movement north-south through the depressions and strongly inhibiting travel across the ridges (Suslov 1961:455). It is important to emphasize that the north-south ridges between the dunes form natural corridors from the eastern Kopet dag foothill zone to the Bronze Age region of Margiana (Figure 1.8). This access bears directly on which regions could be in contact via the desert.

Foothill and mountains

The transitional landscape from the desert to the mountains forms sloping plains referred to as the Foothill zone. There are discontinuous sloping plains and valleys at the base of both the Parapamisus and Kopet Dag mountains. The soils of these regions are very distinctive and fertile.

The vegetation of the foothill regions consists primarily of meadow grass (Poa bulbosa vivipara) and sedges (Carex sp.) which are dependant upon rainfall and stands of juniper and oak trees (Suslov 1961:491-492). Pistachio, oak, pine, ephedra, and juniper are found abundantly in the

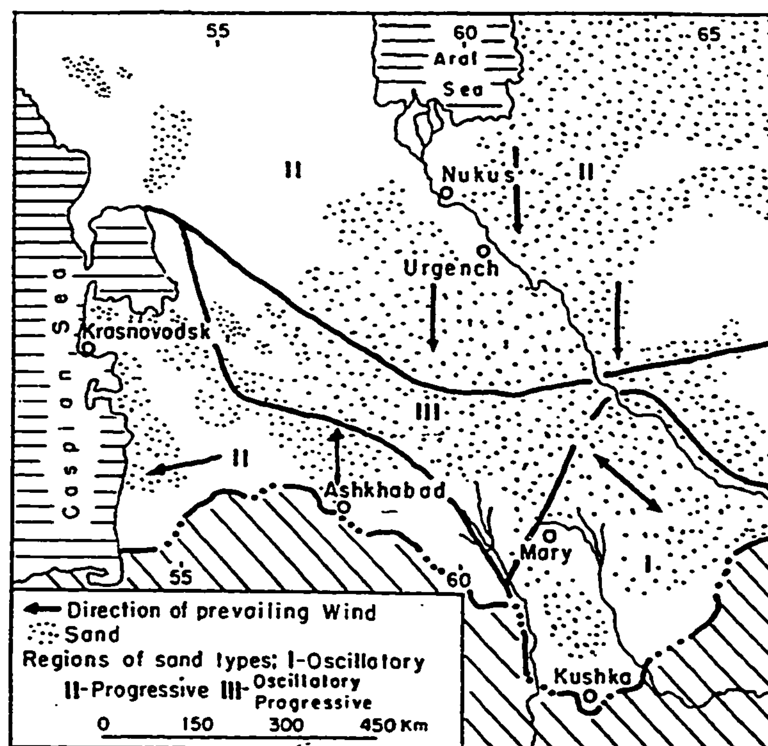


Figure 1.8: Distribution of regions of sand dune types (modified from Suslov 1961:map 14-I). In Region I, stable linear dunes and troughs from natural routes between eastern foothill zone and Margiana.

mountains above. Mountain goat, boar, jackal, leopard, and lion as well as a wide variety of small mammals, birds and reptiles are found in the foothills above 1000 meters and in the mountains surrounding the deserts. Images of the mountain animals are found in some Central Asian Bronze Age designs and figurines. They are most commonly found in the north Bactrian sites, to the south of the Hissar range.

Rivers served as routes leading to mountain areas and up onto the Iranian Plateau. During the Bronze Age occupation there is evidence that raw stone, metals, and other raw materials were brought to the oasis.

The Kopet dag mountains, formed of upraised sedimentary and metamorphic rock, have outcrops along the foothill zone of sandstone, schist, and limestone with nodules of flint. Alabaster, steatite, and semi-precious stones such as amythest and onyx are also found there (Encyclopedia of Turkmenistan 1984).

In other areas, the Hissar range of the Eastern Pamirs is a resource area for copper, tin, silver and gold (Wolfart 1980). To the south and east, the Kungitag and Parapamisus ranges are said to yield ferrous deposits, silver, copper, as well as limestone, alabaster, amythest and onyx (Encyclopedia of Turkmenistan 1984). Carnelian, lapis and some forms of agate can be found in Badakhshan to the east and to the south in Afghanistan (Wolfart 1980).

The desert region is devoid of all of these resources,

and settlement in the desert oasis areas always required adaptation to a severe environment. Life in the traditional oasis is an appropriate analogy for past occupation of the same area and provides a backdrop for the Bronze Age settlements in Margiana.

CHAPTER 2

Bronze Age Sites of Margiana

EARLY PHASES OF RESEARCH

The history of research in Bronze age Margiana began at the end of the 19th century. A Russian architect, Zhukovskii, in a vast survey of the architecture and archaeological remains in the Murgab delta oasis, first noted the existence of Bronze Age remains to the north of the classical sites of Margiana (Zhukovskii 1894). In the beginning of the 20th century, an American archaeological expedition led by Raphael Pumpelly mapped the archaeological sites of the Murgab oasis. Pumpelly surveyed the sites, which he called "kurgans", far north into the desert beyond the present day delta oasis of the Murgab River. His maps include Uch depe at the southern part of the Bronze Age oasis, and included some of the Bronze Age Togolok sites (Pumpelly 1908).

Pumpelly's chronology was based upon rates of soil deposition familiar to him from around the pyramids of Egypt, and was not accepted by the following generation of archaeologists (Peake and Flure 1927). No further western research followed in Central Asia due to the debate on the antiquity of the area and the closing of the area to western researchers following the creation of the USSR.

Major archaeological study of the Bronze Age sites began in the mid 1950's, with the discovery of, and excavations at the sites of Auchin depe and Takhirbai depe 3 (Masson 1956, 1959; Sarianidi 1957). This first stage of archaeological research provided a chronological framework and documented the strong cultural affinities of the Bronze Age Margiana sites with the Kopet dag foothill sites, based on comparisons with the stratigraphic soundings at the eneolithic through late Bronze Age site of Namazga depe (Masson 1957).

Masson originally proposed two complexes of Bronze Age material from Margiana based upon one season of excavation. Finds from Auchin depe were paralleled with the transition from Namazga V to Namazga VI, and finds from Takhirbai 3 were paralleled with Namazga VI (Masson 1959:12-28). Several burials were excavated Auchin depe and the excavations at Takhirbai 3 uncovered rooms from a building complex. The 1959 descriptions of the excavations remain some of the most detailed descriptions of the archaeology of Margiana despite recent widescale excavations. Masson's excavations were small compared to the large horizontal exposures conducted today. The chronology based on the excavations at Auchin depe and Takhirbai 3 was not challenged in the next stage of research; rather archaeologists built upon this framework. Only one period was identified at Auchin depe, and this has been interpreted as the occupation date for not only all of

the site of Auchin depe, but for all of the sites in the vicinity of Auchin.

The majority of the Bronze Age sites to the north and to the west of Auchin depe remained unknown, and none of the unique oasis architecture was excavated during this phase.

The Margiana Archaeological Expedition

The second phase of archaeological research began in 1972, with the organization of the Margiana Archaeological Expedition (MAE) (Sarianidi 1990). It was originally a collaborative effort between the Institute of History, Turkmenistan, and the Institute of Archaeology, Moscow, to expand the excavations begun at Auchin and Takhirbai 3. In the course of the new excavations at Auchin depe and Takhirbai, many new Bronze Age sites were discovered including Gonur depe 1 in 1974. The MAE began a non-systematic topographic survey of sites (Lyapin 1975), in which over one hundred Bronze Age sites were located in the ancient Murgab delta.

The sites found during surveys were named after local wells and nomad encampments, and the mounded sites were numbered in sequence as they were found. Nine groups of sites have been found, named Kelleli, Adzhi-Kui, Adam-Basan, Egri-Bogaz, Taip, Gonur, Auchin, Togolok, and Takhirbai (Figure 2.1). These are Turkmen Turkish names for the areas, for example Gonur (brown), given by the local nomads and

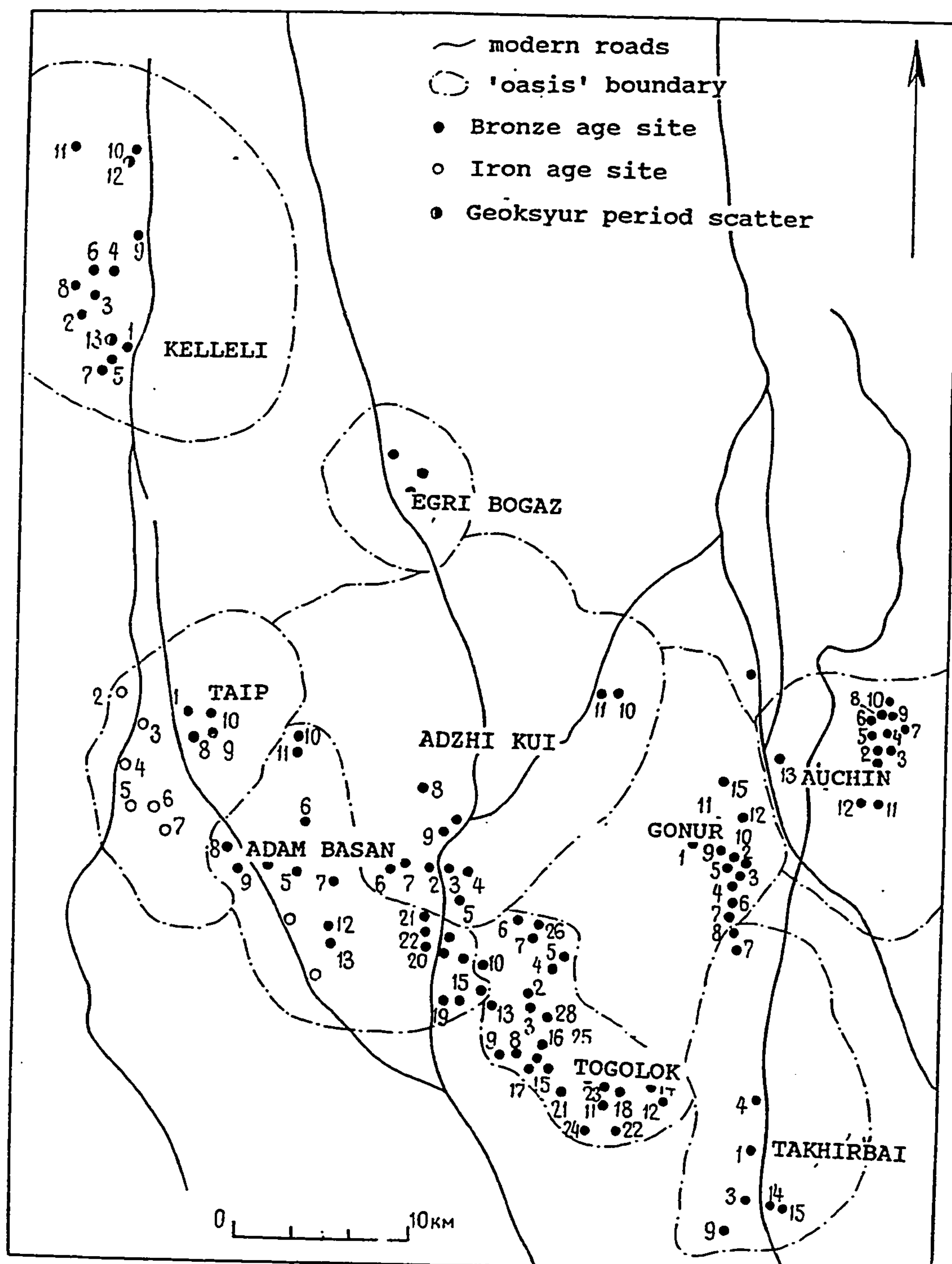


Figure 2.1 Bronze Age sites of Margiana.
(adapted from Sarianidi 1990)

seasonal herders.

While the MAE survey has been non-systematic, it has been conducted for over 40 months of fieldwork (1974-1985) in which the relatively featureless area has been widely crossed. Due to shifting sands, sites in the area are still being discovered, although the general pattern of settlement has been established.

These sites have been grouped into "oases" or "micro-oases" (Masimov 1978, Sarianidi 1981a). These groups of sites, however, are not isolated one from another, but form several long linear patterns. They form three 'branches' north, south and east, probably following the ancient canal and river beds (Figure 2.2).

In 1978 the MAE divided into two teams, one from the Academy of Sciences of Turkmenistan and the other from the Institute of Archaeology in Moscow. Masimov began excavations in the northern sites: Kelleli, Taip, Adam-Basan, Adzhi-kui, (Masimov and Lyapin 1977:552) and Egri-Bogaz (under the direction of Udemuradov); Sarianidi began excavation at southern and eastern sites, around Togolok and Gonur (Sarianidi 1990).

The sites of Margiana are low mounds comprising of eroded mud brick structures with distinctive scatters of ceramics which gleam from millennia of wind erosion. The lack of occupation in the area after the Bronze Age and the deflation of the sites results in an unusual richness of

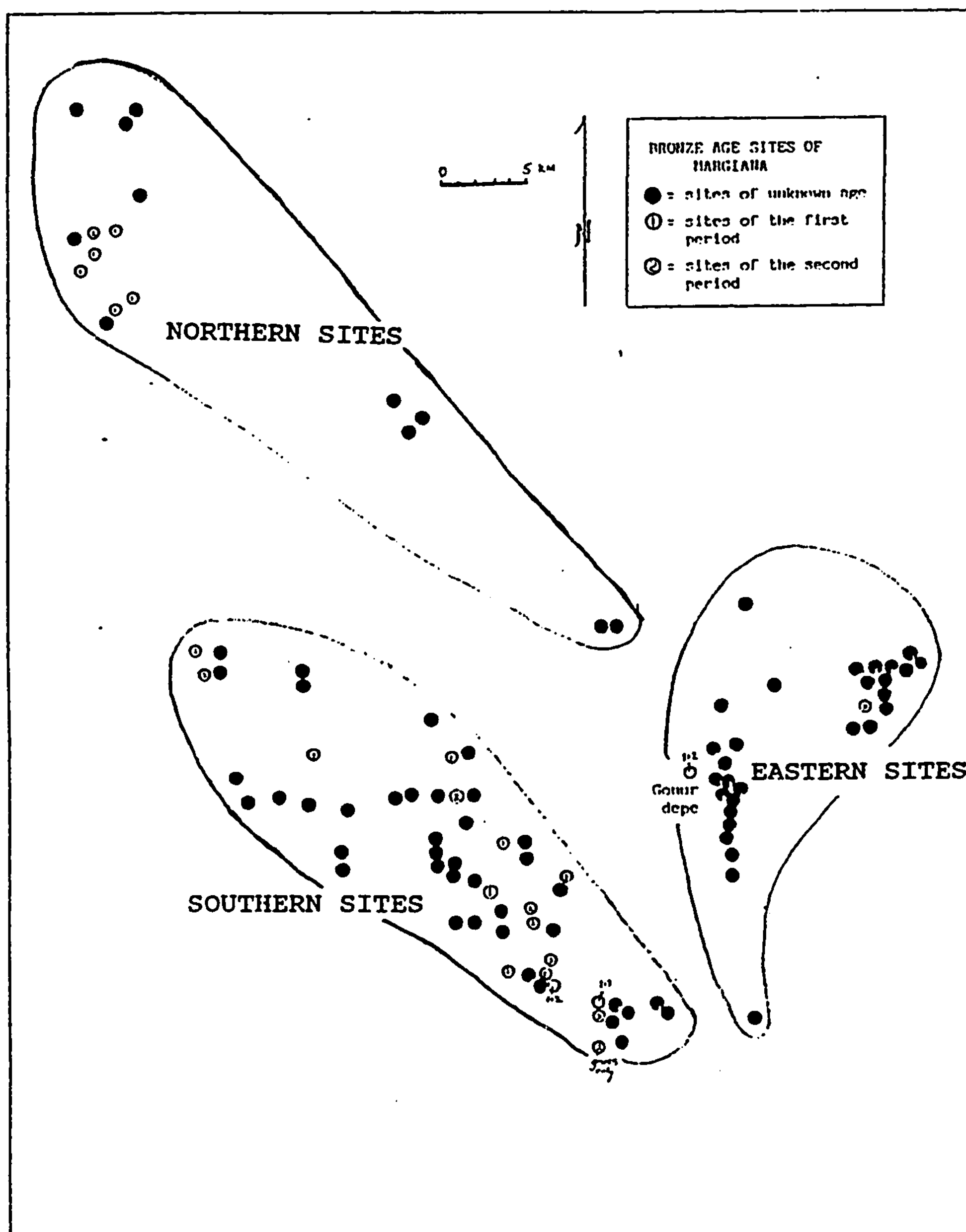


Figure 2.2 Regions of the Bronze Age oasis of Margiana, as defined in this study.

surface finds: fragments of bronze, terracotta, softstone and semi-precious stone are frequently found on the surface of the sites. Unlike in the foothill zone, there was very little tell formation in this area and the typical site has a single architectural complex. This makes widescale horizontal excavation possible.

Methods of the Russian excavations

Widescale horizontal excavations are a distinctive feature of Soviet archaeology in Central Asia, not just in Margiana. This technique is well suited to the types of archaeological sites in Margiana which have shallow deposits, with the walls often visible at the surface.

Differences in excavation methods, and thus the type of data recovered, are also partially due to the use of equipment and tools different from those employed by western archaeologists. For example, the trowel is unknown to archaeologists in Soviet Central Asia, and screens for sifting are not usually found on archaeological sites. Storage space for artifacts is very limited in the Institutes; thus only exceptional pieces and art objects are typically saved, other artifacts being left at the site.

Finally, there are differences between Soviet and Western goals for study. For example, the study of architectural ensembles and determination of the linguistic, religious and ethnic identity have often been important.

During the early 1970s there was an emphasis on ecology and scientific methods in archaeology. Central Asian archaeology, especially research at foothill sites like Altyn depe and Shor depe, included detailed statistical analysis of ceramics, and brief faunal, paleobotanical and metallurgical analyses. These reports were primarily published in the now defunct journal Karakumskie Drevnosti. There has been an explicit shift from these methods to more generalized recovery and description (Kohl 1984). One explanation of this shift from studies of chronology, typology, or paleoecology, to the study of general aspects of the archaeological record, is that the goal of Central Asian archaeology shifted to the analysis of the ideology of the culture (Masson pers. comm.).

My approach to the study of Margiana is to combine fine-scale excavation with observations on the widescale excavation techniques of my Russian and Turkmen colleagues. Several sites excavated by Russian and Turkmen archaeological teams were chosen by me as comparative sites for the excavations which I conducted at Gonur depe. Kelleli 4, Togolok 21, and Togolok 1 provide important assemblages of artifacts and architecture which characterize the Bronze Age oasis settlements of Margiana.

THE NORTHERN SITES

Kelleli sites were investigated from 1979-84 in the

northernmost area of the Margiana oasis. Twelve sites stretching in a generally linear pattern were investigated from 1979-84 by E.Masimov. The first Kelleli site to be excavated (Kelleli 1), was a rescue excavation (now destroyed), and several of the sites were found during land reclamation. Kelleli 3 and Kelleli 4 are sites with single architectural phases; they yielded late Namazga V type ceramics similar to those from the uppermost levels at Altyn depe (Udemuradov 1989). The excavations at Kelleli 3 and 4 have given the name "Kelleli phase" to the first major occupation in Margiana.

Not all Kelleli sites are Kelleli phase. Farthest to the north were several scatters of Namazga III/IV (Geoksyur type) ceramics (Masimov 1979). No architecture was found and the sites have been described as seasonal campsites (Masson 1989). At least one site in the area of Kelleli (Kelleli 6) has later, Togolok type ceramics (personal observations).

To the southeast, the sites of Ergi-Bogaz have been investigated by Udemuradov and are generally small low sites with late Bronze age ceramics. The sites around Kelleli appear to be discontinuous from Ergi-Bogaz and the sites to the south. However sites between Egri-Bogaz and Kelleli were observed on several occasions during trips to Kelleli from Gonur and are presently under study (Masimov pers. comm.).

Kelleli 4

Kelleli 4 was excavated in 1980 and 1981. The site was a low mound with a single architectural level close to the surface. Widescale horizontal excavation uncovered a square building (29.5m x 29.5m) with only ephemeral architecture outside of the enclosing wall (Figure 3.4). Like many sites in Margiana only 10-30 cm of the wall bases were preserved. The architecture of Kelleli 4 was constructed of unbaked mud brick. The only baked brick comes from kilns and burned areas.

Masimov has described the building at Kelleli 4 as a domestic building, with interior rooms forming several apartments and a courtyard (Masimov 1984). The building is considered to be "unfortified" based upon the relatively thin exterior wall. However, the exterior wall is paralleled by interior walls of the domestic structures, these forming narrow corridor rooms surrounding the living quarters. The result is equivalent to the effect of a thick defensive wall (often found in fortified architecture of mud brick forts from later periods in Margiana). Corridors within exterior walls are also found at other buildings in Margiana, such as at Kelleli 3, and Gonur north. Kelleli 4 has five square towers 5.5-7.0 meters wide-- one in the middle of each side and two on the south side on either side of the entrance to the building. On the north side is a square platform of the same size as a tower; this may have been the base of another

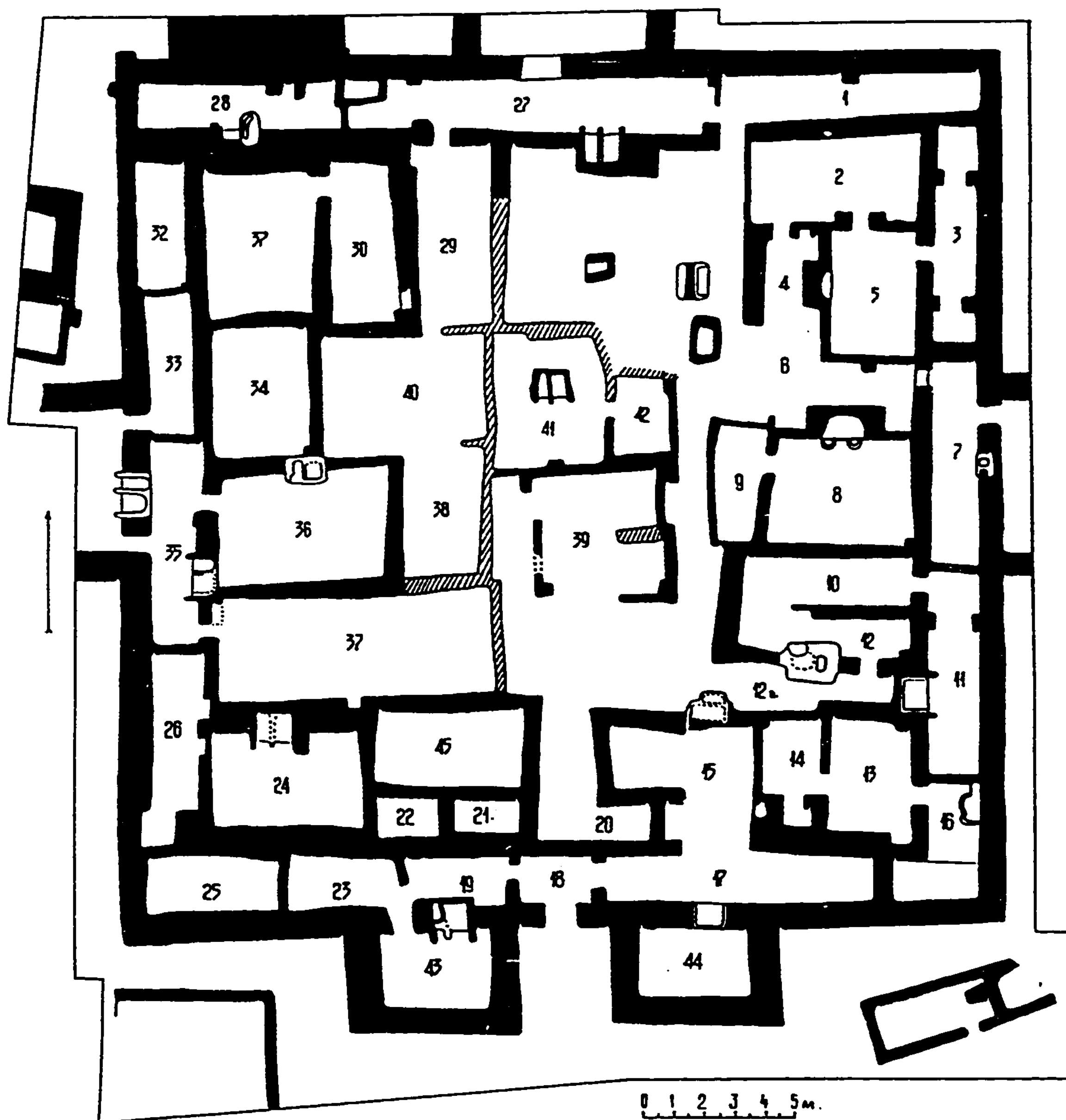


Figure 2.3 Kelleli 4.
(adapted from Masimov 1984)

tower.

The finds included many "khoms" (large storage vessels), terracotta objects including many figurines; small stone objects such as alabaster bowls and beads; large stone objects such as grinding stones, and enigmatic miniature columns and maceheads. Metal seals and tools were also found (Masimov 1984).

Kelleli 3

Widescale horizontal excavations at the large site of Kelleli 3 in 1979 and from 1983-1988 were carried out by a small expedition from the Academy of Sciences of Turkmenistan led by Masimov with the assistance of Udemuradov (Figure 2.4).

Kelleli 3 is a single phase architectural complex surrounded by a large square enclosing wall. The deposit was shallow, similar to Kelleli 4, ranging from 10-50 cm deep. An area roughly 2800 sq m was excavated in the southeast and northwest corners. The exterior wall is doubled forming a four meter wide surrounding wall 109m on a side. The building appears to be well planned with six towers on each side and an entrance in the middle of each side. The entrance on the east side had an open drain running out of the door with a mud brick cover at the doorway. The interior architecture from the southeast corner formed several

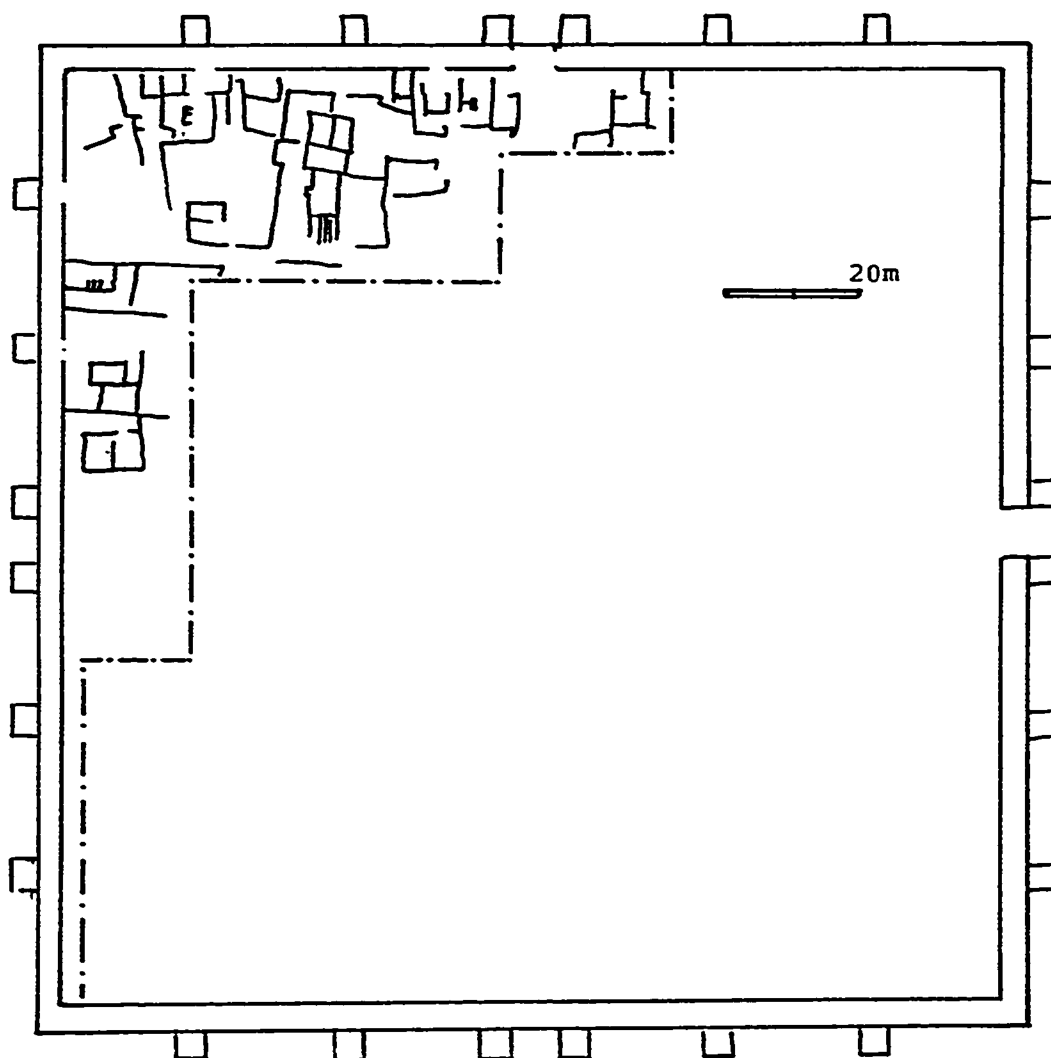


Figure 2.4 Sketch plan of Kelleli 3
(courtesy of I.S. Masimov)

'micro-complexes' (Masimov pers. comm.) which can be interpreted as domestic units or apartments similar to those at Kelleli 4. The domestic areas at Kelleli 3 may be connected to an interior courtyard (here, unexcavated) similar to the central courtyard at Kelleli 4.

THE SOUTHERN SITES

The sites around the modern wells of Taip, Adam-Basan, Adzhi-Kui and Togolok lie in a northwest-southeast line. Of these, the Togolok sites are at the southernmost end, near to the Takhirbai sites. Excavations at Togolok 21 have revealed a large, single period fortified building complex. This site has given its name to the second period in Margiana: the Togolok period. The artifacts from Togolok 21 are so similar to the artifacts from excavations at Dashli in southern Bactria and Sapalli and Djarkutan in northern Bactria that the term 'Bactrian-Margiana archaeological complex' was first coined on the basis of finds from Togolok (Sarianidi 1987).

Togolok 21

The site of Togolok 21 is the largest of a series of small sites which are aligned in a northwestern direction. A small production area with kilns and ceramic slag is located 250 meters to the north. The site at Togolok 21 is located

on a small natural rise and is located 600 meters to the south of the site of Togolok 1. Thus, the small mounds of Togolok 21 and Togolok 1 form an almost contiguous series of sites.

The building complex covers 1 ha and was completely excavated in several seasons (Sarianidi 1990). No architecture was found outside of the outer perimeter wall. A gully runs through the middle of the site and the archaeological deposit inside of the building was differentially preserved (Figure 2.5).

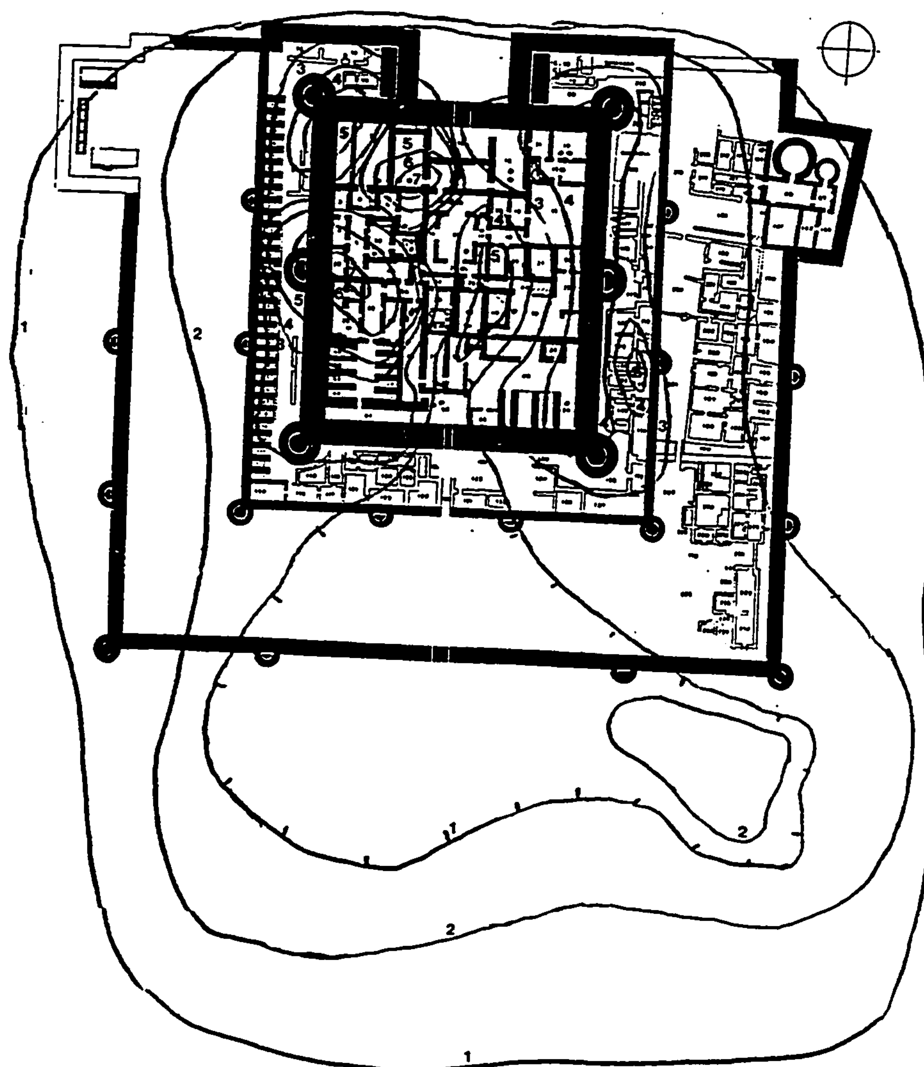


Figure 2.5 Togolok 21. Site plan superimposed on contour map. (adapted from Sarianidi 1981, 1990)

The building complex at Togolok 21 has a single basic plan. It has two concentric rectangular walls surrounding a central building with dimensions of 53 x 62 m. The surrounding walls are 2-3 m thick with towers along the sides and at the corners. The central building has 4.5 m wide walls with towers and a large entrance to the north. The building has two phases of construction: the original building was built on sterile soil (Phase 1); later occupation reused the Central Building with some modification and new floors, and many rooms were built within the enclosing walls (Phase 2) (Figure 2.6). A third "phase" consists of burials dug into the deposit and the floors of the building (Figure 2.7).

The distinctive miniature stone columns, steatite, alabaster fragments, stone cylinder and bronze compartmented seals found in the rooms are very similar to those found in northern and southern Bactria (Sarianidi 1986). The small finds and the ceramics were not excavated separately by phase. Phase 2 architectural modifications were found in the main building, in particular from room 23, and the ceramics from the central building include both Phase 1 and Phase 2 ceramics. However, the assemblages from the outer perimeter area (primarily Phase 2 architecture) differ very little in terms of types from the ceramics and small finds from the main building.

The burials were dug into the rooms along the east side.

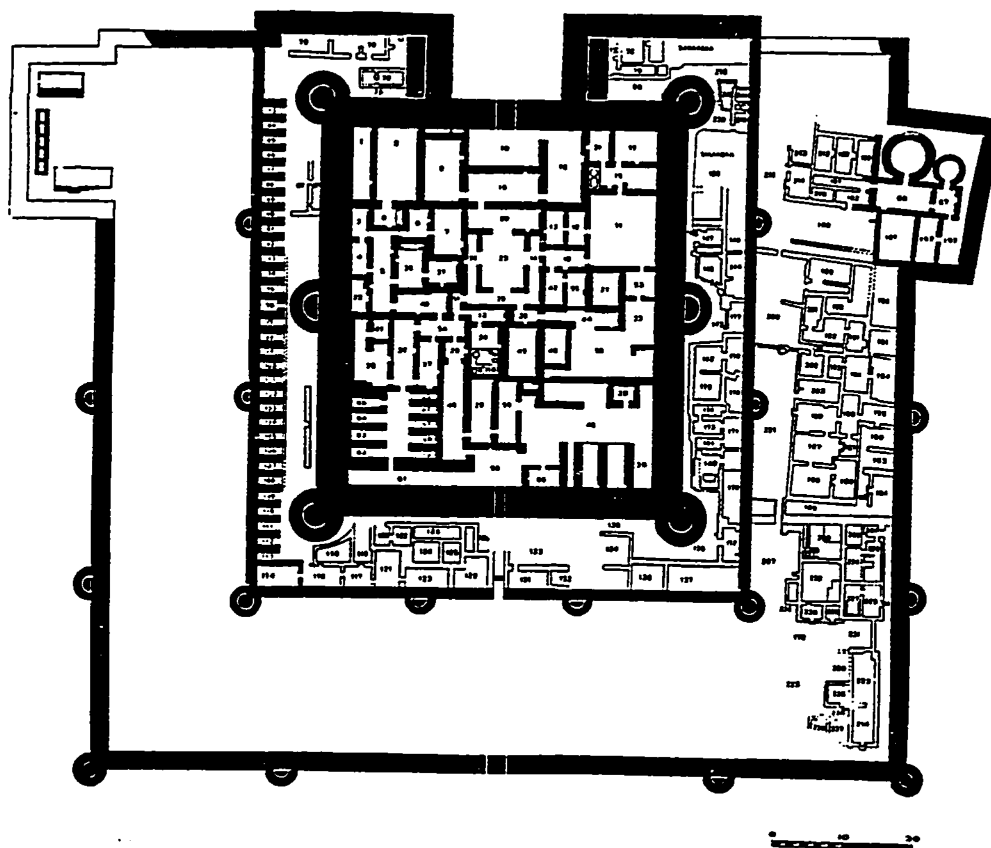


Figure 2.6 Togolok 21. Plan of building complex.
Solid walls = Phase 1, built on sterile soil.
Hatched walls = Phase 2, on top of Phase 1.
Note: Phase 2 occupation was best preserved on the east side, but appears to have been widespread over the site. (adapted from Sarianidi 1990:fig 25)

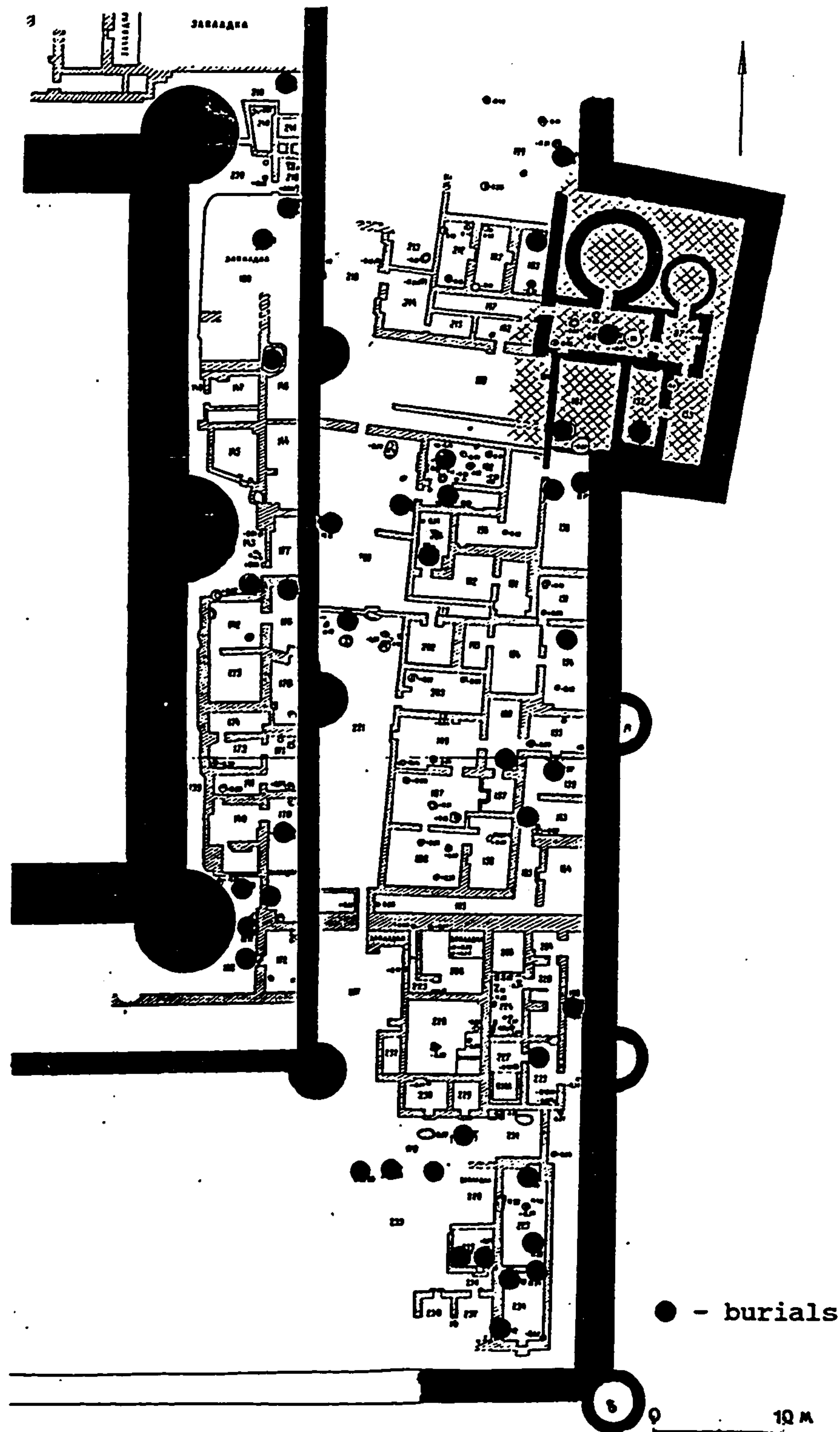


Figure 2.7 Togolok 21. Location of burials in the architectural complex. (adapted from Sarianidi 1990:fig 31)

The ceramics from the burials were analyzed separately from the architecture, and there are no differences in form between ceramics found in rooms and in the burials (Piankova 1989), though frequencies of forms may differ and types may differ. This suggests that parts of the building were contemporaneous with the burials, and that the entire occupation of the building occurred within a relatively short period of time.

Togolok 1

Togolok 1, consists of a small (3.5 m high) northern mound and a larger lower rectangular mound. A large architectural complex was excavated on the low rectangular mound in 1987-88 (Figure 2.8). The building is considered by Sarianidi to be a smaller version of Togolok 21 (Sarianidi, nd). The structure also had two architectural phases and a phase of burials intrusive to the architecture. On the east side, several burials were found, including the largest and most richly furnished burial so far found in Margiana (Figure 2.9)(Sarianidi 1990).

Ceramics from the widescale horizontal excavations are typologically similar to those from Togolok 21 (Piankova 1989), and the small find assemblage also includes miniature stone columns, seals, softstone fragments and bronze fragments typical of the Bactria-Margiana Archaeological

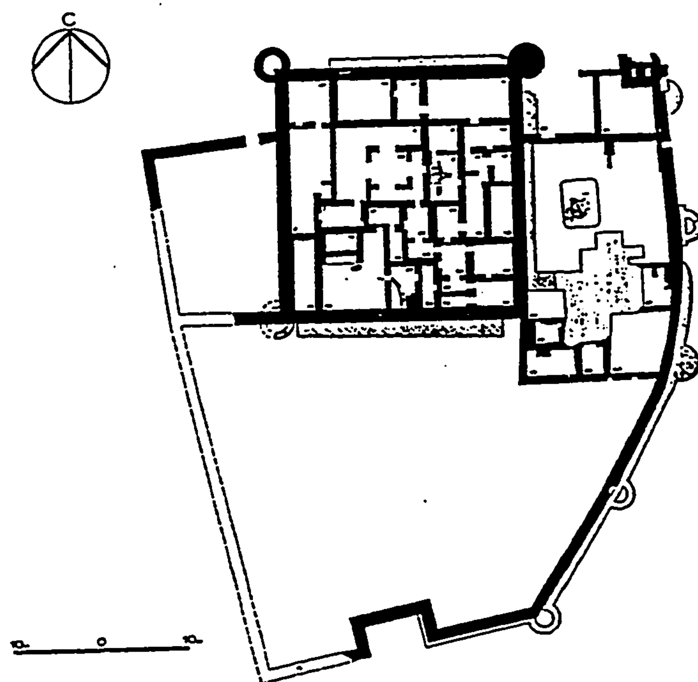


Figure 2.8 Togolok 1. Plan of the building complex. (courtesy of V.I.Sarianidi)

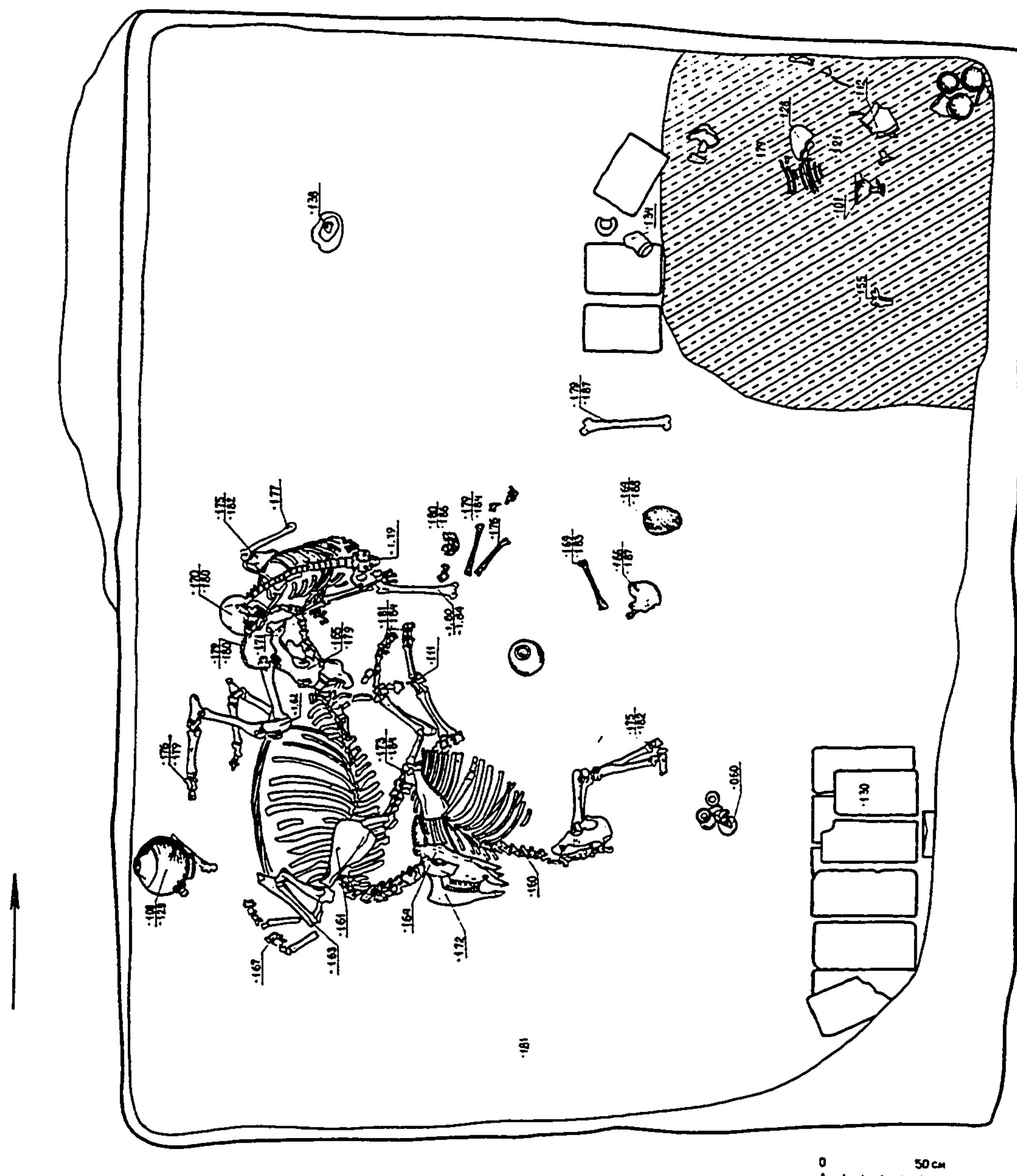


Figure 2.9 Togolok 1. Plundered burial. Large pit burial, contemporary with the building complex. Contained at least two humans and two bovid skeletons. Mud brick stairs give access to the pit in the southeast corner. In the northeast corner, was a large cache (100+) of thin walled open pedestal base vessels (type 2.A.2), (courtesy of V.I.Sarianidi)

Complex.

A stratigraphic sounding was made on the north edge of the mound in which seven half meter levels were excavated (Sarianidi 1987a). In the lower levels, ceramics and small finds typical of the finds from Kelleli 3 and 4 were identified, while the upper layers contained ceramics similar to those from Togolok 21.

Togolok 24

In 1985 a series of tombs were salvaged from desert reclamation program at Togolok 24 about 2 kilometers to the northwest of Togolok 21 (Sarianidi 1986a). These burials had ceramics of similar form to Togolok 21 and Togolok 1 (the latest phase). They were different from the burials found in the architecture in that they were constructed with rectangular mud brick tombs (Figure 2.10). The tombs were typically divided into two parts by a brick partition. The body was placed on a brick floor on the left side of the partition, and on the other side many vessels and food offerings were provided (Sarianidi 1986a). Many of the small finds are similar to the small finds found in the architecture of Togolok 21 and Togolok 1. They are also similar to small finds from the tombs at Dashli in southern Bactria and the robbed tombs and both architectural and tomb context at Sapalli and Djarkutan in northern Bactria.

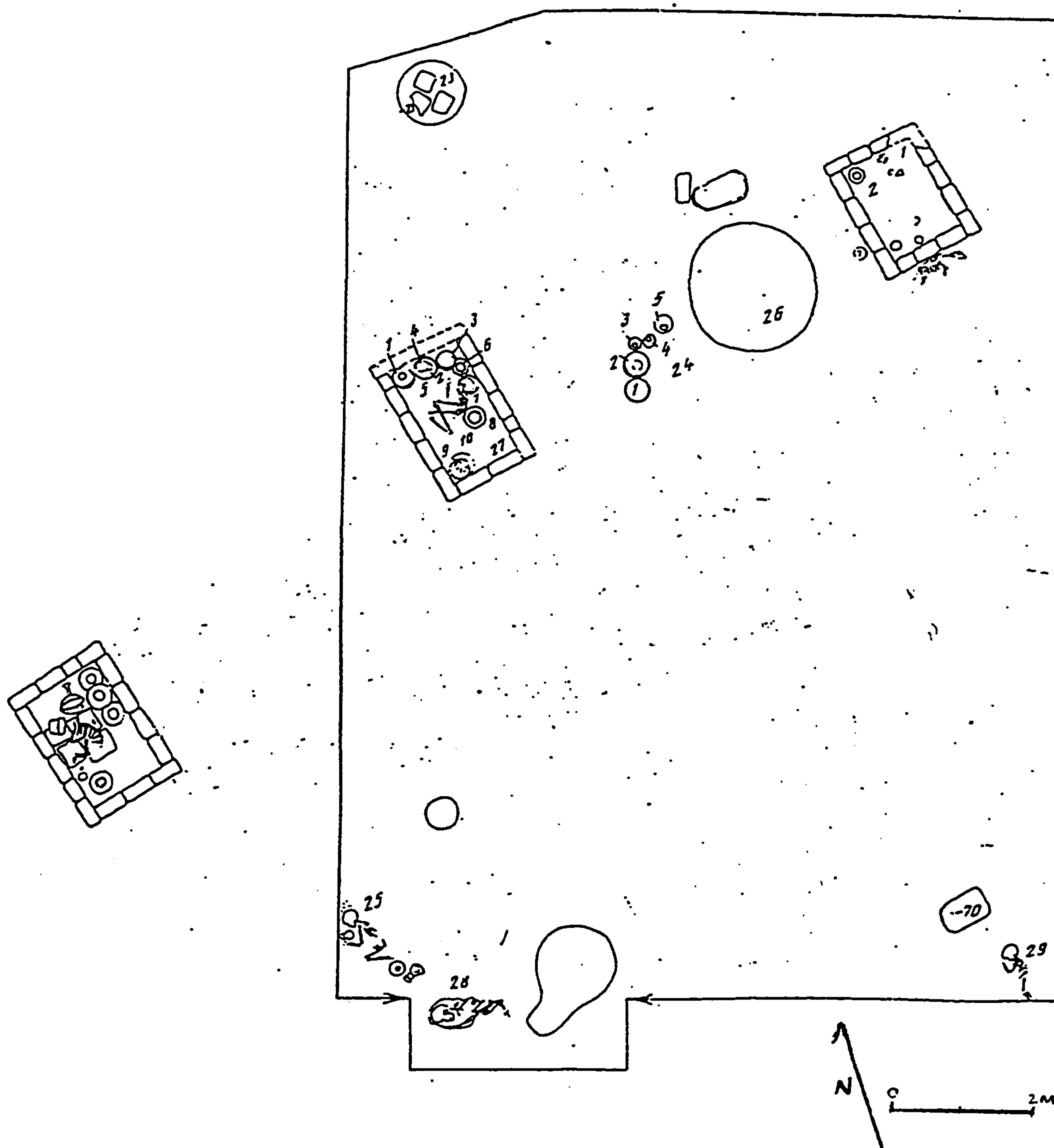


Figure 2.10 Togolok 24. Plan of excavated burials, Period 2 (BMAC) (adapted from Sarianidi 1990: pl 55).

THE EASTERN SITES

The easternmost group of sites around the wells of Auchin, Gonur and Takhirbai stretch in a line northward and follow a generally linear pattern. The largest of these sites is Gonur depe 1 (simply called Gonur depe). Gonur depe was the arena for collaborative investigations in 1988-89. Sarianidi allowed me to conduct excavations, to observe his ongoing excavations and to study the materials from these excavations.

Gonur depe: site description

Gonur depe is itself a series of low lying mounds, the raised surface of which cover an area of 22 ha. Unlike the other sites,

Gonur has superimposed layers of occupational debris with several stratified occupation levels and architectural phases.

I made detailed observations about the nature of the site organization. The area of ceramic scatter extends 50-100 m beyond the mounded area of the site, including both areas of deflated architecture and areas where archaeological materials had been disturbed from their original context by wind and erosion (Figure 2.11).

In areas of the mounded area of the site, sherd densities are quite high. To give an example of the density, sherds in several 1x1 meter squares were picked up. On the south mound, one pick up of every sherd greater than 2cm on a side yielded a density of 218/sq m.

There are clear differences in artifact assemblages found over the surface of the site. On the north mound, among the ceramics, figurines of the early period of the Bronze Age Murgab delta sites were found along with fragments of bronze, stone vessels and other small finds. On the south mound among the ceramics we found amulets made of semi-precious stone, steatite and bronze small objects.

The northern mound rises to over 4 meters above the plain, making it the highest Bronze Age mound known in Margiana. It is an irregularly shaped mound with a large central area, typical of the Margiana sites. Within the region of site build-up, there was apparently continuous

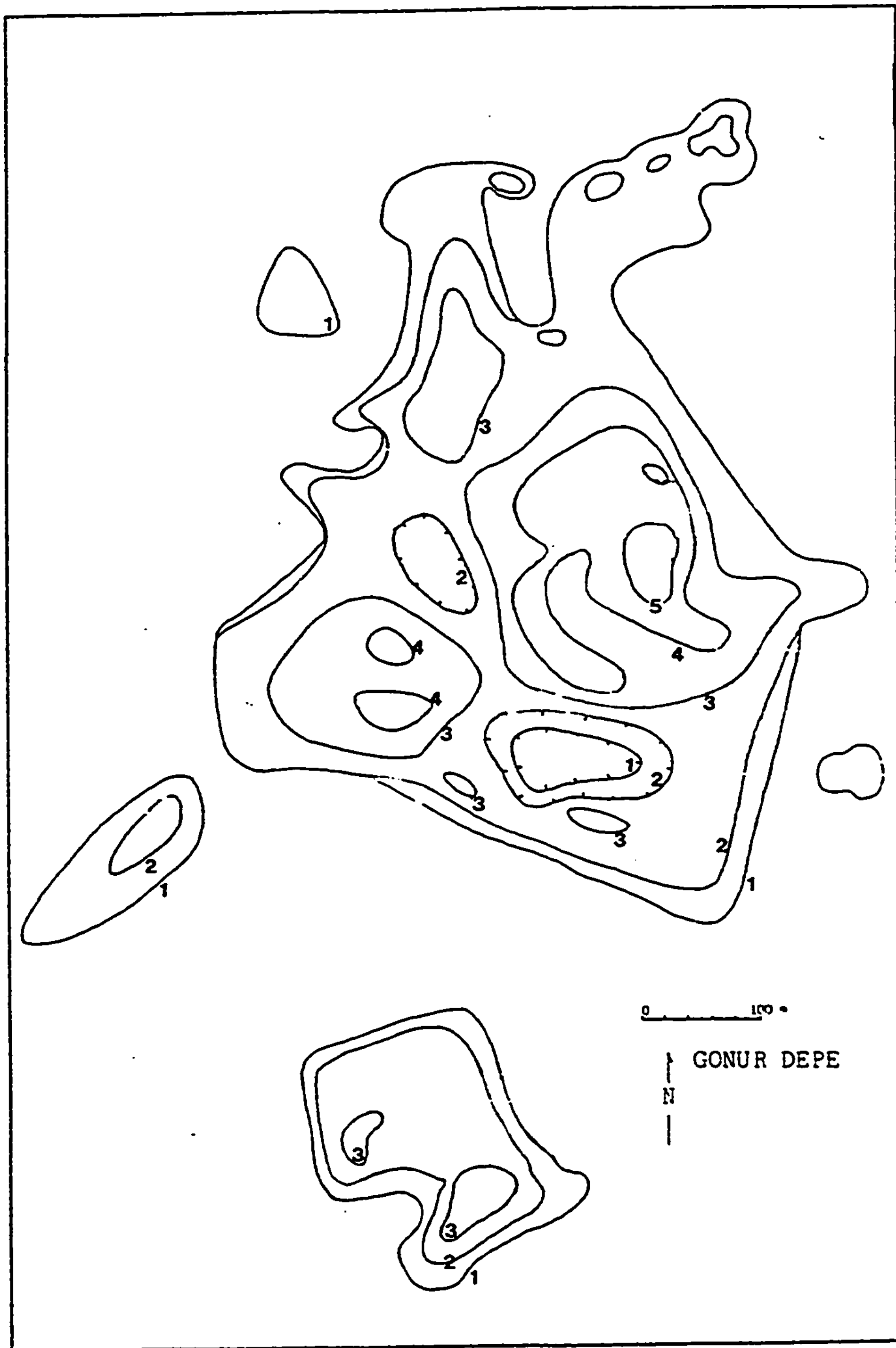


Figure 2.11 Gonur depe. Elevation plan.
Surveyor: A.Lyapin (1974), updated F.Hiebert (1989)

site occupation.

Excavations are on-going at Gonur depe and various areas of the sites had been excavated by the end of 1989 (Figure 2.12). A large building on the north mound was partially excavated in 1981-1983 (discussed in Chapter 6). This building, referred to as the kremel, has fortified exterior walls and planned, straight inside rooms. Surrounding the area of the kremel is an area with deep midden deposits where I excavated a sounding (hereafter called 'the deep sounding'). Outside of the monumental architecture and the middens, the north mound has widespread architectural remains with areas of burials and cenotaphs. An architectural area was chosen for excavation outside of the monumental areas in order to compare the monumental and non-monumental occupations (called 'the domestic architecture').

To the west there is a small mound separated from the rest of the site. Its discontinuity is due to a modern road which heads north, and cuts through the deposit. Estimates of the size of Gonur must take the modern destruction of the site into consideration.

To the east of the north mound, is a small mound composed of a crumbled mud brick structure which dates to the medieval period. This building appears to have been a kishlik, or small rest house, similar to others found in the desert on a route from the medieval center of the oasis (Sultan Qala) to the medieval oasis of Urgench, south of the

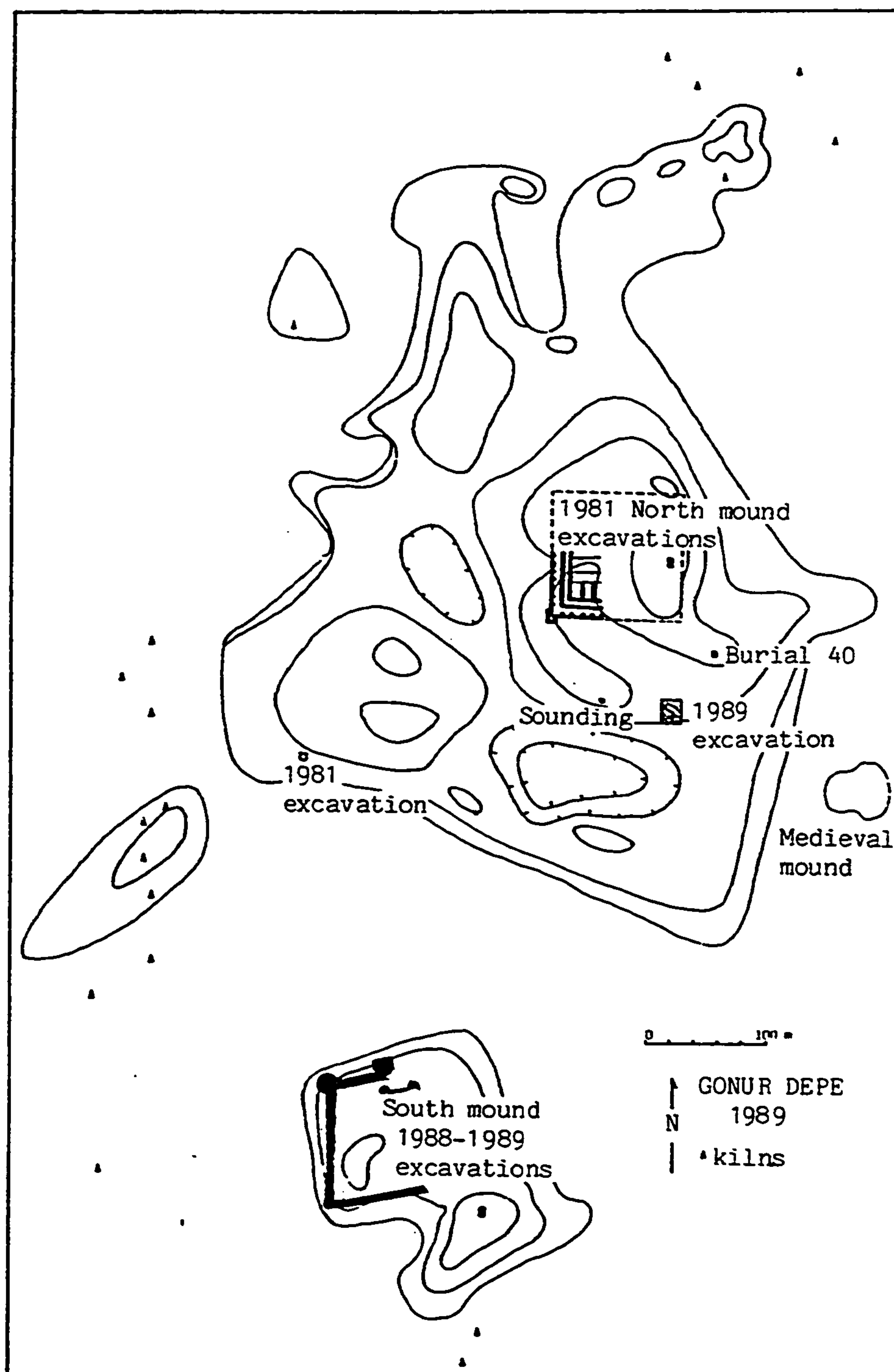


Figure 2.12 Gonur depe: Plan of 1989 excavations.

Aral Sea. Glazed ceramics and small artifacts of bronze and silver have been found on this mound as well as have been found scattered in among the Bronze Age materials on the north mound.

The north mound and the south mound are located 600 meters apart. The area between the mounds has a scatter of small wind blown sherds, with those above 2 cm on a side being rare (less than 25 per sq m), and appears to be without any occupational levels.

The south mound is not as large as the north mound (140 x 140 m). It is a rectangularly shaped, flat mound which represents the remains of a single building complex with a large (4.5 meter wide) wall on the four sides, and with outside dimensions of 120 x 130 meters. This is the area of intensive wide-scale excavation from 1988 to the present. I participated in and observed these excavations (discussed in Chapter 7). The building complex has several architectural phases with earlier pits beneath the architecture and later constructions on the mound. Caches of ceramics and small finds (cenotaphs?), burials and production areas are found on the south mound.

To the south of the south mound is a small hillock, composed entirely of ashy midden. It most likely represents midden from the uppermost levels of the building complex on the south mound.

Surrounding the site to the north, south, and west of

the mounded areas, sherd scatters tend to cluster in patches. Some of these patches have kiln bricks eroding out of the central area of the sherd scatter. These kiln bricks are baked red to vitrified green, with the vitrification dripping down on the surface of the bricks, that line the inside of the kiln.

Often sherds from a single vessel are found grouped together on the surface. These often cannot be associated with architecture, and are usually considered to be part of deflated cenotaphs, burials or isolated pottery caches.

Within a kilometer of the site of Gonur, a large "nomad station" was found being exposed from under a large sand dune (Figure 2.13). No living surface was found in a small test excavation on the site, although sherds from more than fifty hand made "nomad-style" vessels were recovered. The extent of the visible scatter of sherds was 30 x 20 m. Large fragments of fired brick were found in this scatter, although there are no kilns at this site. Most likely these brick fragments were brought in from kilns at Gonur to be used as hearth stones. Four pieces of ground stone but no chipped stone, bone or metal were found. Both "nomadic" ceramics and typical Bronze Age wheel made ceramics were found together, and although not an in situ deposit, this site appears to have been occupied during the time of the south mound at Gonur (Kuzmina, Piankova and Moore, in press).

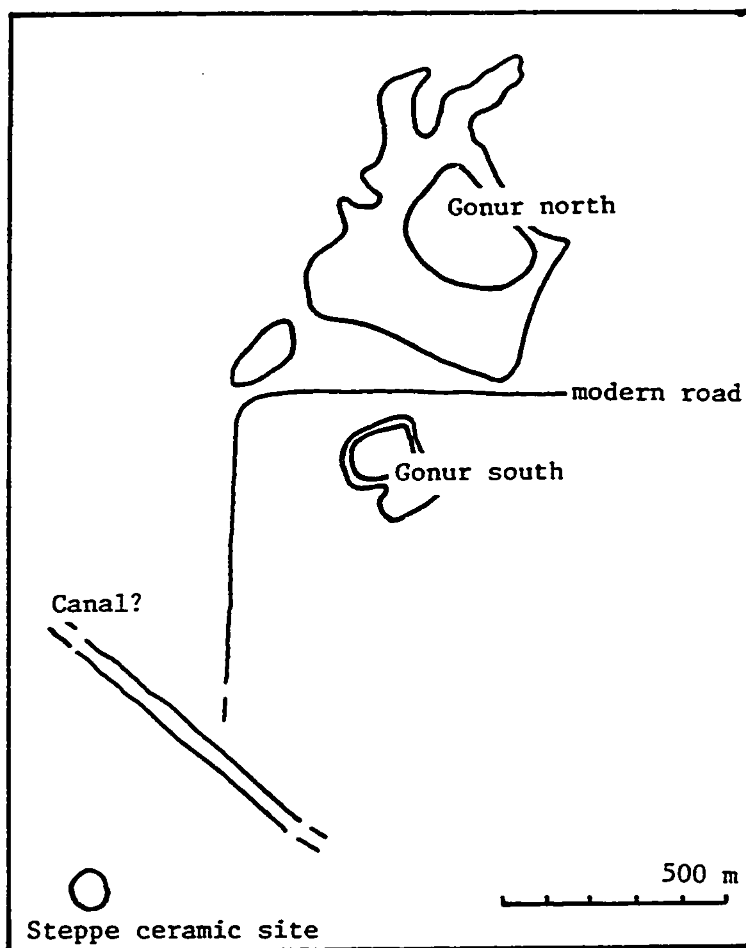


Figure 2.13 Area surrounding Gonur depe showing the location of the 'canal' and Andronovo steppe nomadic site.

The shifting sands around the edges of the small modern takyrs hide sites, and it may be that other sites in the immediate area of Gonur will be found in the future.

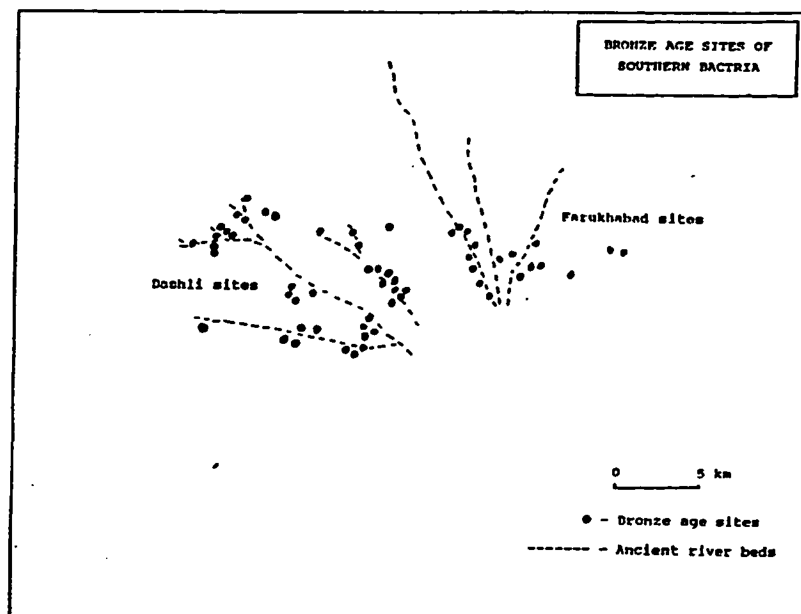
SITE DISTRIBUTION

The Bronze Age 'building complexes' of Margiana are dispersed across the landscape rather than being clustered or agglomerated settlements such as those found in the foothill zone of the Kopet dag. The sites are isolated from each other in generally linear bands with no obvious nucleus.

The Bronze age oases both of Margiana and southern Bactria have similar dispersed settlements along what may have been ancient river beds and canals (Figure 2.14).

If we compare the Bronze age oasis settlement pattern with that of the classical period in whole area of the Margiana oasis, the pattern is remarkably similar: dispersed fortified buildings (smaller ones called dings and larger ones called qala), rather than a simple urban center (Figure 2.15). The architecture of the traditional Central Asian oasis consists of isolated buildings, and large and small fortified settlements which have agricultural fields between them (Szabo and Barfield 1991). This type of settlement is different from the Near Eastern city (Childe 1953) or the classical and medieval Near Eastern urban center (sharistan) characterized by a densely occupied, internally

differentiated large settlement with a surrounding rural hinterland. The only evidence for an urban/rural dichotomy in Margiana is found in the 11th-12th century AD (Alkhamova 1953). In Central Asian oases the individual building complexes and canals reflect traditional social and economic organization based upon the segmentary lineage. The oasis pattern is typical not only of Margiana (during many periods), but of the oases around Bukhara, Khiva and Bactria during the medieval period (Figure 2.16). This Central Asian pattern appears to have been established in Margiana in its first widespread occupation during the Bronze Age.



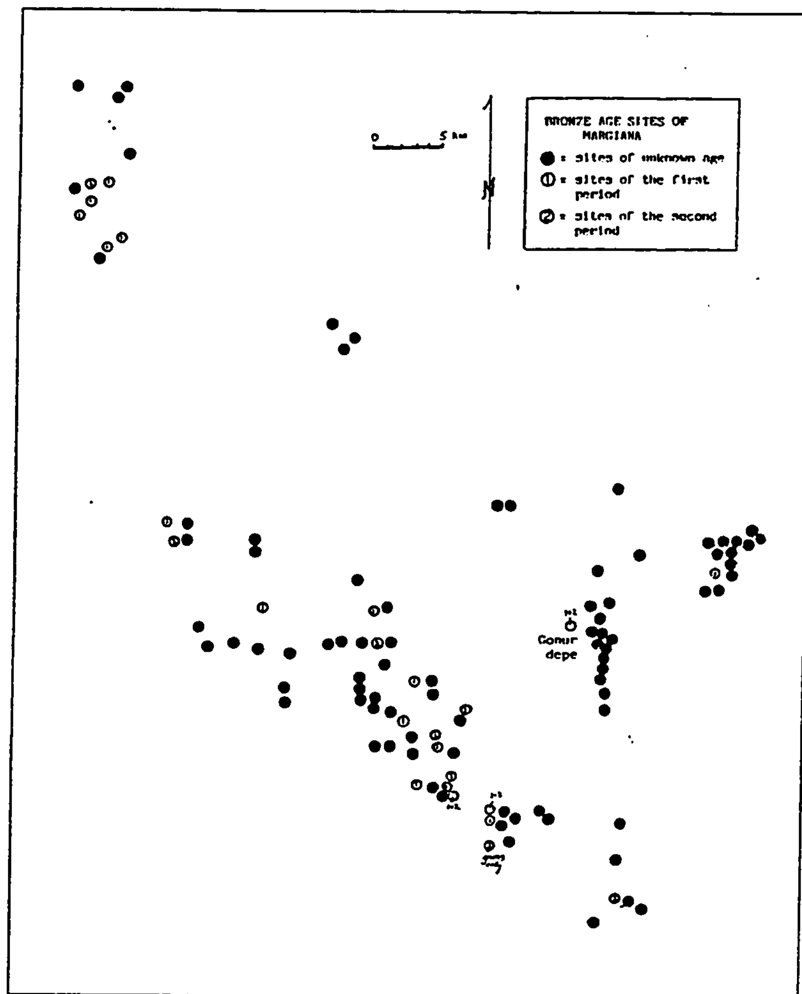


Figure 2.14 Site distribution of Bronze Age Margiana (bottom) and southern Bactria of the Dashli and Farukhabad oases (top) (adapted from Sarianidi 1977 and 1990)

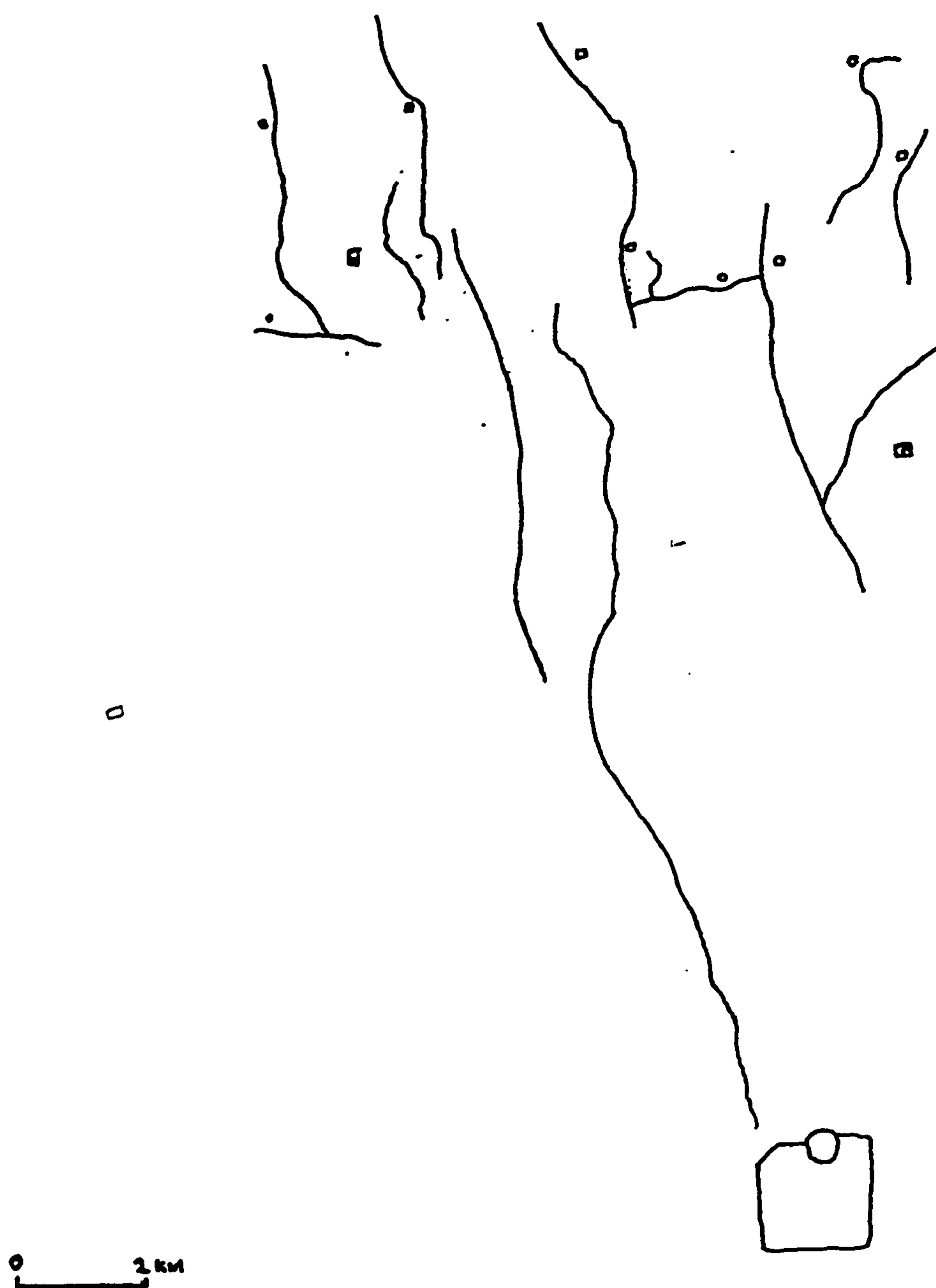


Figure 2.15 Site distribution of 'Classical" (Sasanian) period sites in the Murgab River delta, south of the Bronze Age oasis of Margiana.

Figure 2.16: Map of late medieval irrigation system from Bukhara oasis. Names of clans are associated with individual irrigation canals (from Mukhamedzhanov 1978:fig 19).

CHAPTER 3

GONUR DEPE: ARENA FOR COLLABORATION

STRATIGRAPHIC EXCAVATIONS AT GONUR

As part of my participation in the 1989 spring excavations at Gonur depe, a deep sounding was stratigraphically excavated on the side of the north mound four meters above the surrounding plain (Figure 3.1). This area was outside the area of known architecture, 100 meters to the southeast of the 1981-83 excavations of the monumental building, or "kremel". It turned out to be an area of finely stratified midden, which provided a rich assemblage of ceramics and charcoal for dating and deposits of seeds and bone.

The midden is fairly widespread over this area. A small sounding (1 x 1 m) located 17 m to the south (Figure 3.2) contained similar stratified layers of ashy midden, soil, and sands and had a high density of ceramics. This sounding was dug prior to the excavation of the deep sounding to test the deposit (Figure 3.3). The strata of the test sounding were practically horizontal and 1.2 meters deep to sterile sand (materik).

The deep sounding was excavated to sterile sand. It is possible, however, that there are earlier periods buried beneath the alluvium at Gonur, although no sherds of distinctive Namazga III or IV painted ceramics have been

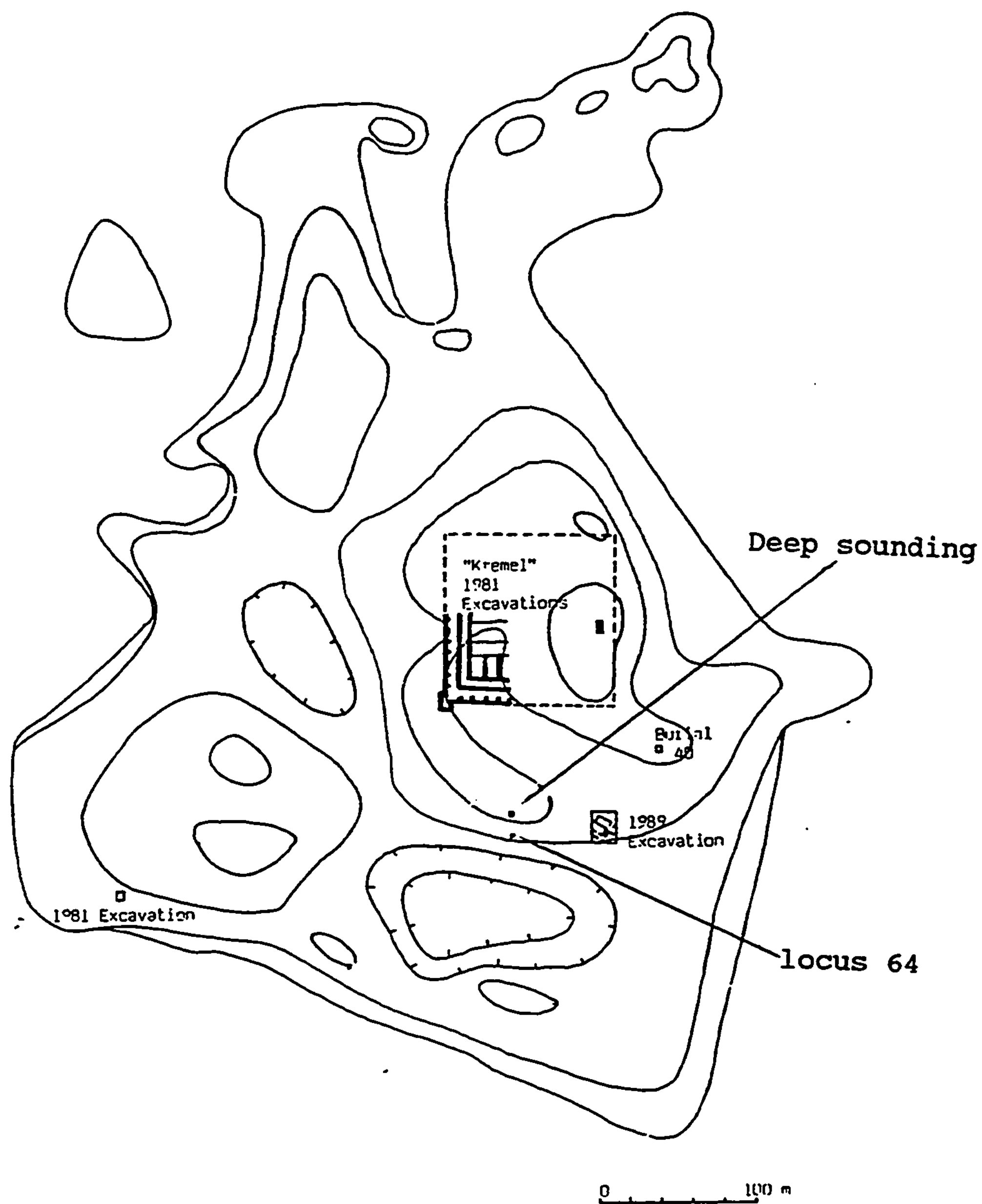


Figure 3.1: Location of the 'deep sounding' on the north mound at Gonur depe.

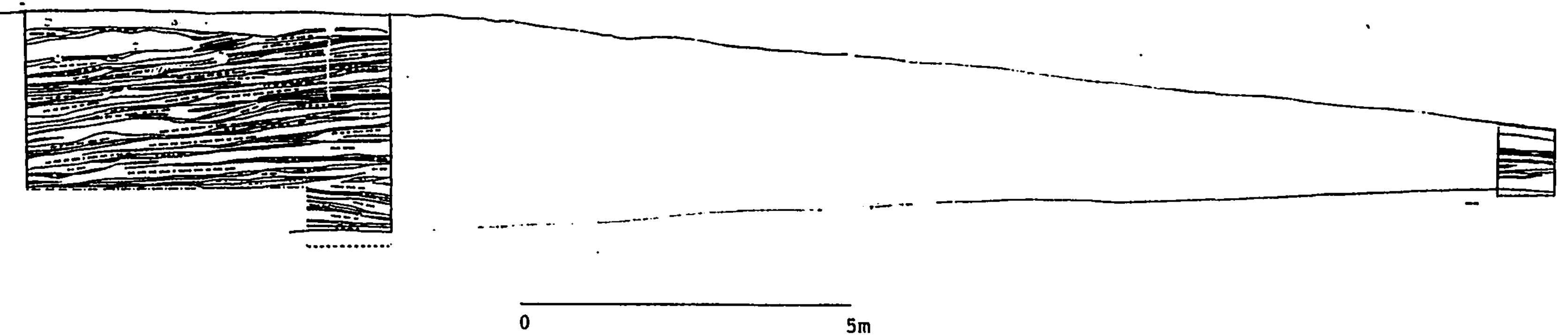


Figure 3.2: Cross section of north mound through 'deep sounding and preliminary 1 x 1 m test 17 m to the south.

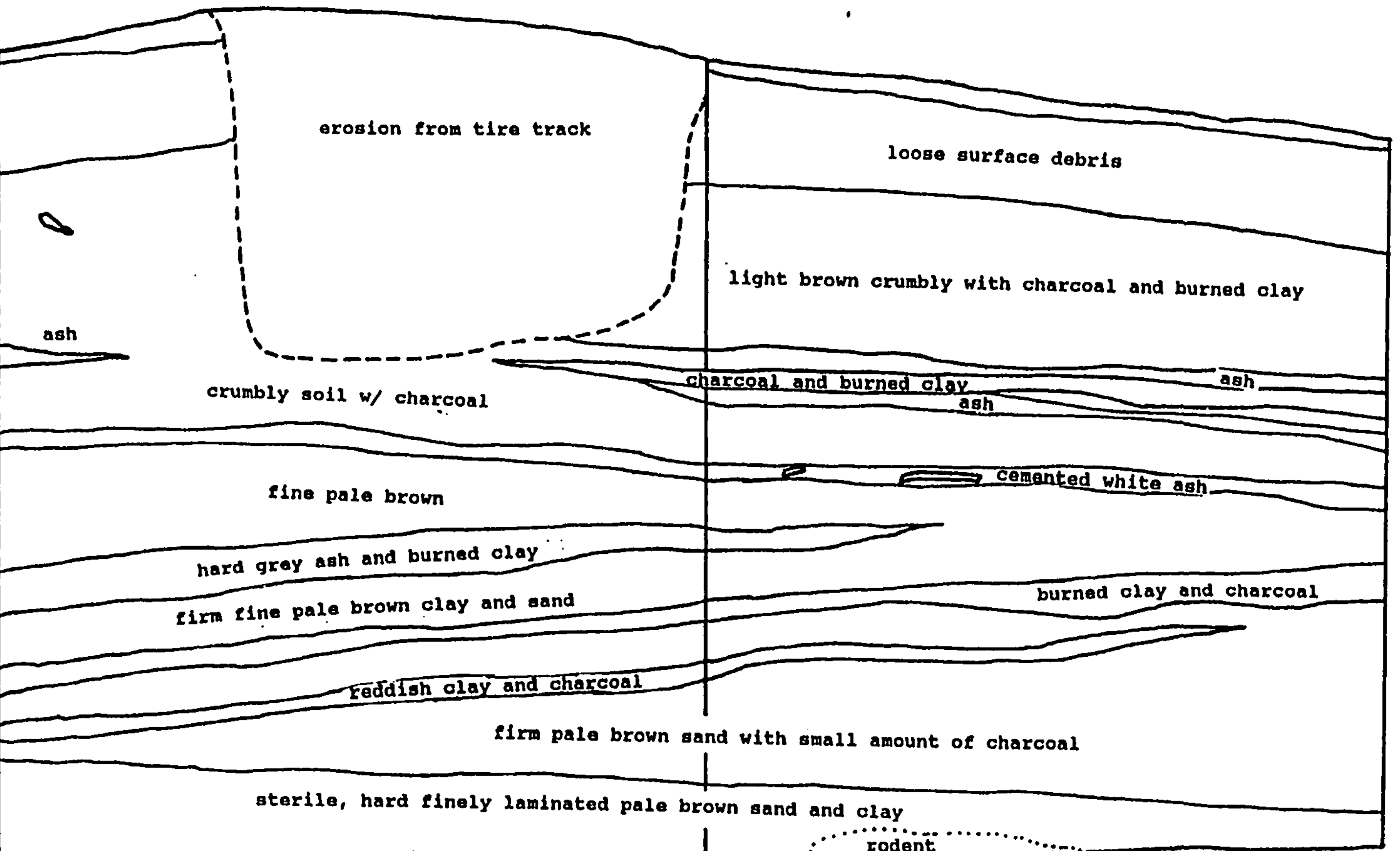


Figure 3.3: 1 x 1 m preliminary test excavation. Gonur north. North and east section.

found during extensive surface surveys.

Later materials have recently been found in the uppermost building level at Gonur south, excavated in the fall of 1990. These ceramics are similar to the ceramics from Takhirbai 3 (Masson 1959). This period appears to be transitional from late Bronze Age to the early Iron Age. I had no access to the original Takhirbai materials, excavated in the mid 1950s, and the sites of Takhirbai 1 and Takhirbai 3 have subsequently been destroyed by modern development. The archaeological materials from the later periods at Gonur have not been included in this study.

Description of the excavation and deposits

The excavation area was 6 meters square, divided into four 3x3 meter units. Below 1.5 meters, the excavation area was reduced to 3mx6m, which was excavated another 1.20 meters. The last 80 cms were excavated in an area 1 x 1 m at the bottom of the deep sounding. Sterile soil was reached at 3.5m below the surface (Figure 3.4).

A horizontal living surface and associated brick fall were found on the sterile sand in the first layer. Above it lay 3 meters of very soft midden which sloped strongly to the northwest.

The stratigraphy of the midden was well preserved, with very little natural mixing between the layers. A few rodent holes ran through the deposit, but these do not affect the

Figure 3.4: East section of the 'deep sounding' at Gonur north.(section drawing by K.Moore).

study of the ceramic sherds. The layers contain charcoal, ash, and sandy soil. The fine lenses of unsorted material are layered in the position in which they were thrown out, practically basket by basket, and there was no post depositional mixing such as pits, or trenches for foundation walls. The analysis of the plant parts indicates that the middens most often originated from sweepings from architecture. This suggests that the material represents the refuse of daily life, unlikely to contain older material from the surface of settlement.

Method of excavation

The smallest unit of analysis is the locus, which is the excavation unit. These are grouped into layers, which are stratigraphically defined units. The layers are grouped into periods on the basis of the ceramics and small finds.

The sounding was excavated using 3x3 m squares dug in 20 cm units (locus units). This permitted us to excavate units which came from single layers, despite the marked slope of the deposit (Figure 3.5).

All sherds were counted from each locus unit, thus providing estimates of ceramic density. All pottery rims and bases were collected and drawn. The original goal was to screen all of the deposits with 1/4 inch screen, but despite several months searching, this screen could not be found in the Soviet Union. Recovery of ceramics and small finds by eye was regularly checked with a hand sieve, and I noted

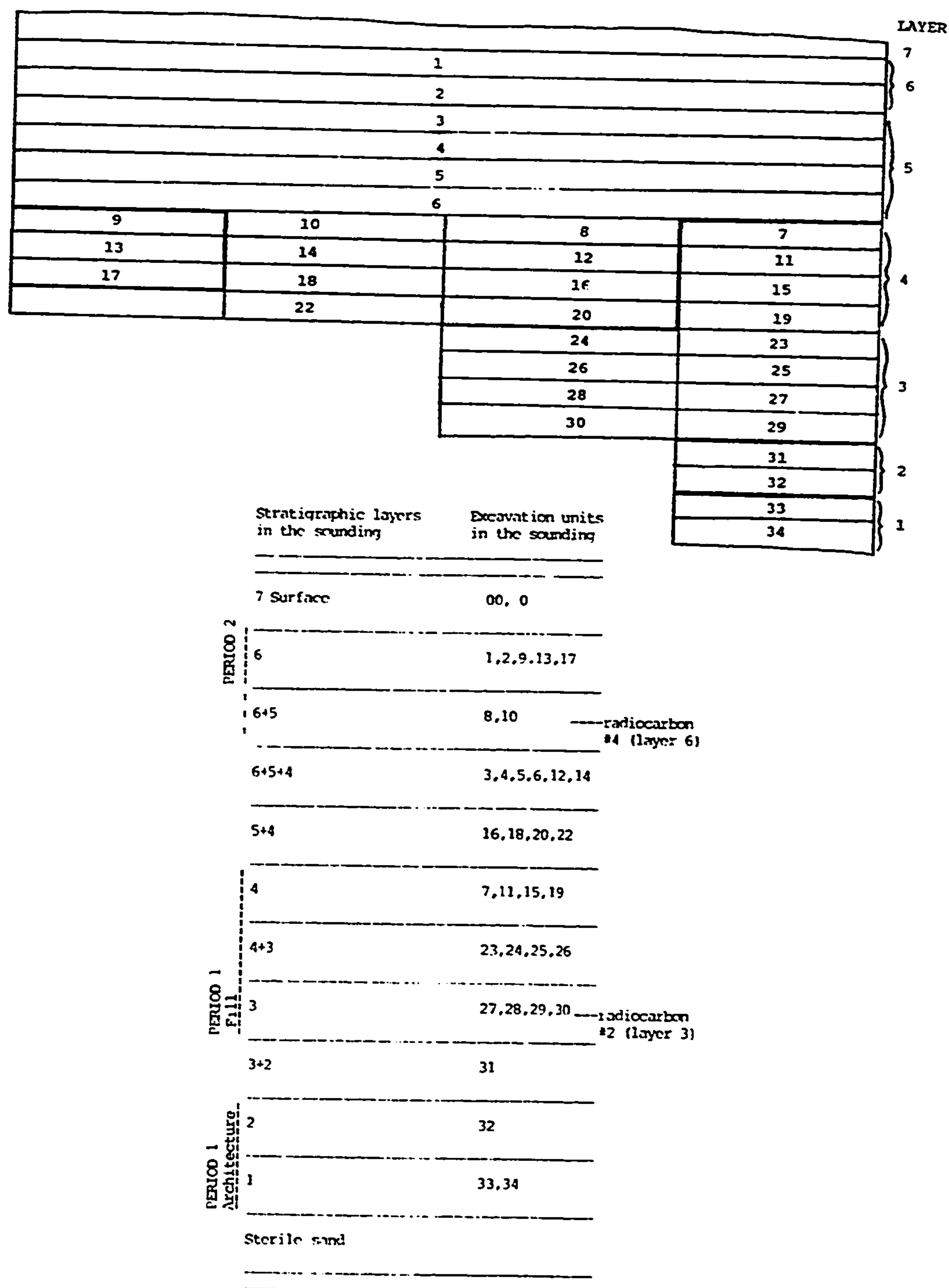


Figure 3.5: Schematic drawing of excavated loci from the 'deep sounding', and the correlation of excavated loci and stratigraphic layers.

that few sherds larger than 2 cm ended up in the backdirt. I consider that the percentages of diagnostic types and wares are representative of the actual deposit. Statistics which I present on the ceramics, however, should bear this methodology in mind. Table 3.1 presents the data on sherd density which is recorded by ware and by type of ceramic (base, body, rim). I use the density of archaeological material from the deep sounding (number of sherds greater than 2 cm on a side) as an indicator of the original context.

Several fine-screened (1/16th inch mesh) botanical samples were taken in each of the stratigraphic layers (Figure 3.6). Identification of the constituent parts of the deposits (charcoal, plant parts, dung, sand ,etc) allow me to suggest the origins of the dump deposits based upon the inferences developed by Hillman (Hillman 1984).

THE STRATIGRAPHY

The stratigraphy naturally lies in seven distinct layers above sterile sand.

Sterile sand and clay are found 0.5 meters above the surrounding takyr which formed a small naturally deposited dune-like hillock. Fine sieving of this yellowish-grey sand in the final 1x1 m probe at the bottom of the excavation showed that it contained no ceramics, stone, bone, or charcoal. This same sandy deposit is found throughout the

PERIOD 2

Loc	Vol	Coarseware Rim	Coarseware Base	Coarseware Body	Coarseware Tot	MFC Rim	MFC Base	MFC Body	MFC Tot	Other	Total	Density
2	8.3	0	0	7	7	69	28	584	681	1 stamp	688	82.9
9	1.8	1	0	0	1	19	3	189	211	----	212	117.8
13	2.3	.0	0	1	1	29	10	252	291	----	292	127.0
17	1.8	1	0	0	1	22	3	203	228	----	229	127.2

PERIOD 1

Loc	Vol	Coarseware Rim	Coarseware Base	Coarseware Body	Coarseware Tot	MFC Rim	MFC Base	MFC Body	MFC Tot	Other	Total	Density
24	2.3	0	0	9	9	34	26	208	404	2 Redware	415	90.2
25	1.8	2	1	0	3	15	9	172	196	2 pod-stavki	199	110.5
26	1.8	0	0	0	0	16	9	115	140	----	140	77.8
27	1.8	0	0	2	2	21	14	167	202	----	204	113.3
28	1.8	0	0	0	0	22	15	165	202	----	202	112.2
29	1.8	2	0	1	3	25	15	151	191	----	194	107.8
30	1.8	0	0	0	0	28	15	175	218	----	218	121.1
31	0.4	0	0	0	0	2	4	34	40	----	40	100.0
32	0.3	0	0	1	1	5	2	44	51	----	52	173.0
33	0.4	0	0	3	3	6	4	66	76	----	79	197.5
34	0.4	0	0	0	0	1	1	14	16	----	16	40.0

Table 3.1: Density of ceramic sherds in the volume of excavated deposit: coarseware, 'MFC'= medium fine chaff (wheelmade wares). Density is per cubic meter.

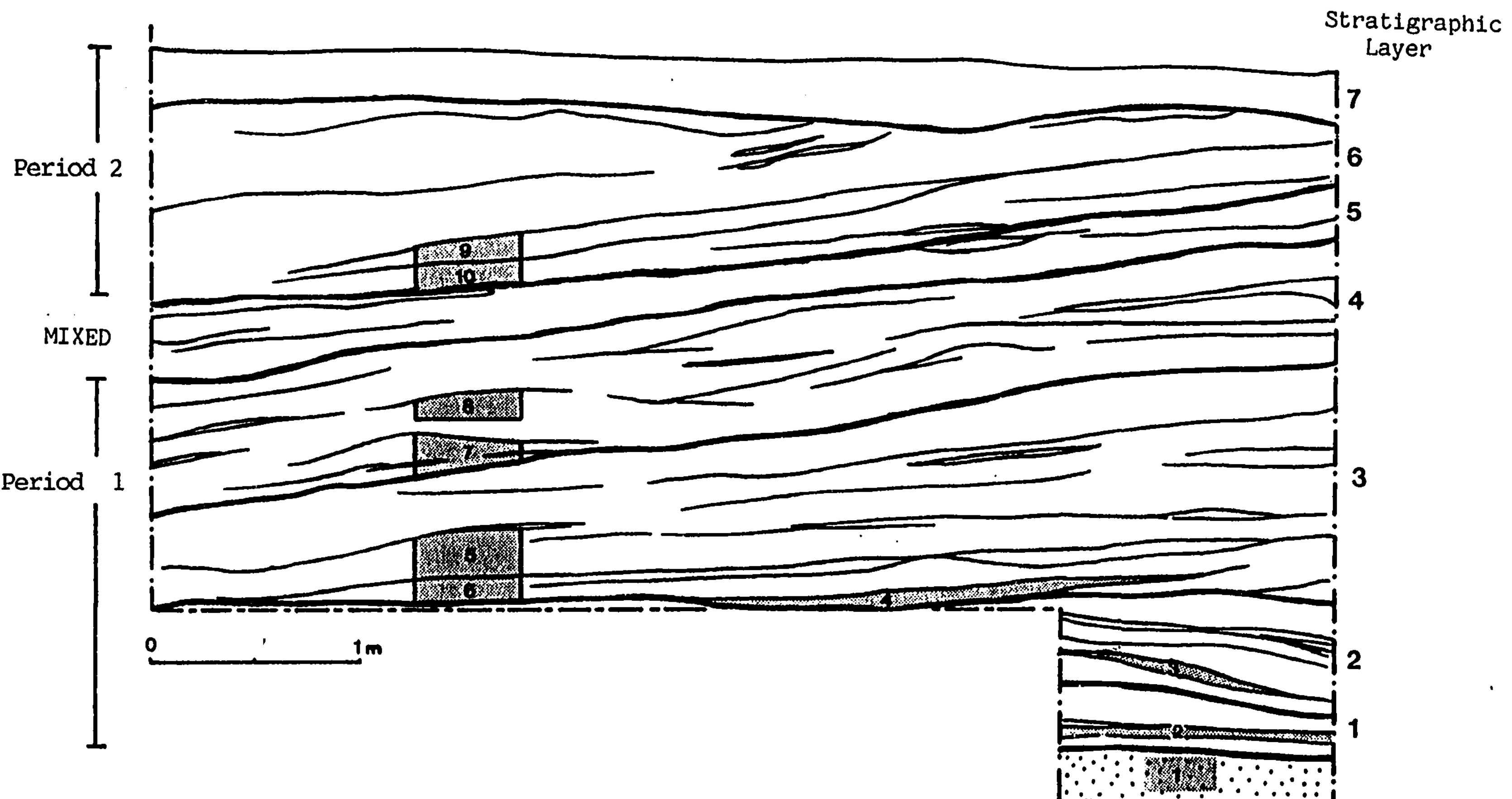


Figure 3.6: Location of the 10 soil samples of the 'deep sounding'.

area of the site and is called "materik" in Russian. It does not contain any alluvial or water laid deposits. Such a base layer may indicate that the site of Gonur was outside of the natural alluvial deposit of the ancient delta of the Murgab River.

Layers 1 and 2

The earliest two layers are primary deposits from occupation in the area; these were excavated only in the 1x1 m probe at the base of the deep sounding.

Layer 1 (Loci 33,34) 20 cm thick, is the first archaeological deposit on the sterile sand. The cultural material comes from layered ash, reddish and reddish-brown sand, and a thick compact layer of cemented ash and tamped clay. Ceramics, bone and ash lay directly on the tamped clay surface. On the surface at the edge of the excavation was a circular hearth-like feature. Wood charcoal and charred sheep/goat dung, burned and unburned bone, and charred seeds came from the hearth. In the small area excavated, it appears that this surface follows the sloping surface of the natural mound, unlike the later midden deposits.

The second layer (Locus 32) is reddish brown sandy sediment 20-30 cm thick lying above the occupational layer and also sloping to the south with the natural slope of the mound. It is a dark colored layer containing charred twigs and sticks, burned daub, burned and unburned bone and a high

density of ceramics (above 100 sherds/m3). This layer is probably the remains of building collapse of the mud brick. Future excavations of these occupational layers will reveal the nature of the initial settlement in this area.

Layers 3 and 4

Layers 3 and 4 represent two different periods of fairly rapid dumping, with individual lenses remaining discrete. These deposits are most likely from the kremel, which Sarianidi reports had been kept clear of debris during its occupation and had clean sand on the floors (Sarianidi 1990). This is a common feature in the occupational history of large buildings (such as large Roman buildings, pers. observations), and is an obvious source for the middens of Layers 3 and 4.

Layer 3 (Loci 27,28,29,30) was excavated over 3x6 meters. It was from 50 to 80 cm thick across the trench and consisted of pale brown sandy sediment, with many thin lenses of ash and charcoal sloping to the north-east. This was a midden deposit that probably had been deposited quite rapidly, since the deposit was not eroded or wind sorted.

Layer 4 (Loci 7,11,15,19) 60 cm of sloping midden also probably from the monumental building, was more completely sorted, i.e., larger than those from layers 1-3. Each individual lens was larger in area than in layer 3, and some were separated by layers of windblown sediment. Dumping of

trash in this area was apparently less frequent during this time. The midden seems to have come from a variety of deposits and included some fragments of highly fired daub from a kiln or baking oven. Some of the lenses had a high percentage of charred plant parts which probably came from an area where storage and processing of grains took place.

Layer 5

Layer 5 (Loci 3,4,5,6,12,14), a sloping 25-30 cm layer, consisted of reddish brown soil in fine lenses and some very thick, unsorted, lenses heavy in charcoal. This layer was rapidly deposited, perhaps indicating production from ovens or kilns rather than from household occupation. It was mixed due to the slope of the deposit, but the profile indicates no hiatus in site use.

Layer 6

Layer 6 (Loci 1,2,9,13,17), contained thick lenses of dumped material with a change in the type of ceramics and small finds.

Layer 6 is divided from layer 5 by a thick charcoal layer which cuts across the entire trench. Above the widespread charcoal level was a hard layer of cemented ash and charcoal. This deposit was very similar to that found in the bottom of the local ceramic kilns. These thick layers of charcoal and burned clay also had a high density of sherds including wasters and other domestic debris.

Surface: Layer 7

The seventh layer (Loci 0,00), the uppermost 30 cm of the excavation, was a soft or dusty pale brown soil of mixed debris. It included ceramics and small finds of several periods. The modern surface has a firm crust, 3-5 cm thick, which represents periods of wind deflation and which was strewn with small finds and ceramics of both Bronze Age periods. The small objects lying on the surface were not in their original position, but had been windblown from other areas of the site. Thus, systematic collections of surface finds at a multi-period site such as Gonur depe will not necessarily indicate the age or nature of the specific small areas of the site. Even though different parts of the site were occupied at different times, surface finds do not accurately reflect the changing settlement.

CERAMICS AND SMALL FINDS

Period 1

Layers 1-2 (in situ occupational levels) and layers 3-4 (midden, most likely from the monumental architecture) contained ceramics similar in form to the ceramics from Kelleli 3, Kelleli 4, and the artifacts from the floors of the kremel architecture and from the nearby domestic architecture. No difference between the ceramics from the upper and lower layer were noted. The ceramics and small finds belong to the earliest widespread occupation at Gonur,

which I call Period 1. The ceramics (Layers 1-4) do not have the range of forms recorded from the wide-scale excavations of architecture at Gonur-1 or from the domestic architecture. However, these ceramics do provide an idea of the frequency of the forms which were broken and discarded (Figure 3.7).

The most distinctive small finds are the terracotta human figurines: three fragments come from good context associated with the Period 1 ceramics (Figure 3.8:1,2,6). Other figurines which come from the deep sounding are not associated with a particular set of ceramics (Figure 3.9). Interestingly, there is a great deal of variation in the form of the human figurines found together with the Period 1 ceramics, including the typical "piedmont" Namazga V crowned figurines and seated figurines more typical of earlier periods. Two fragments of ceramics have distinctive applied figures and incised trees (Figure 3.8:7,Figure 3.9:4). Whorls or wheels (Figure 3.8:4), animal figurines (Figure 3.8:3) and steatite vessels (Figure 3.8:5) also came from good context. The overall assemblage of ceramics and small finds (especially the terracotta human figurines) appear to be similar to the few artifacts from the nearby building at Gonur north (<u>kremel</u>), to the finds from domestic architecture of Gonur north, and to the materials from Kelleli 3 and Kelleli 4.

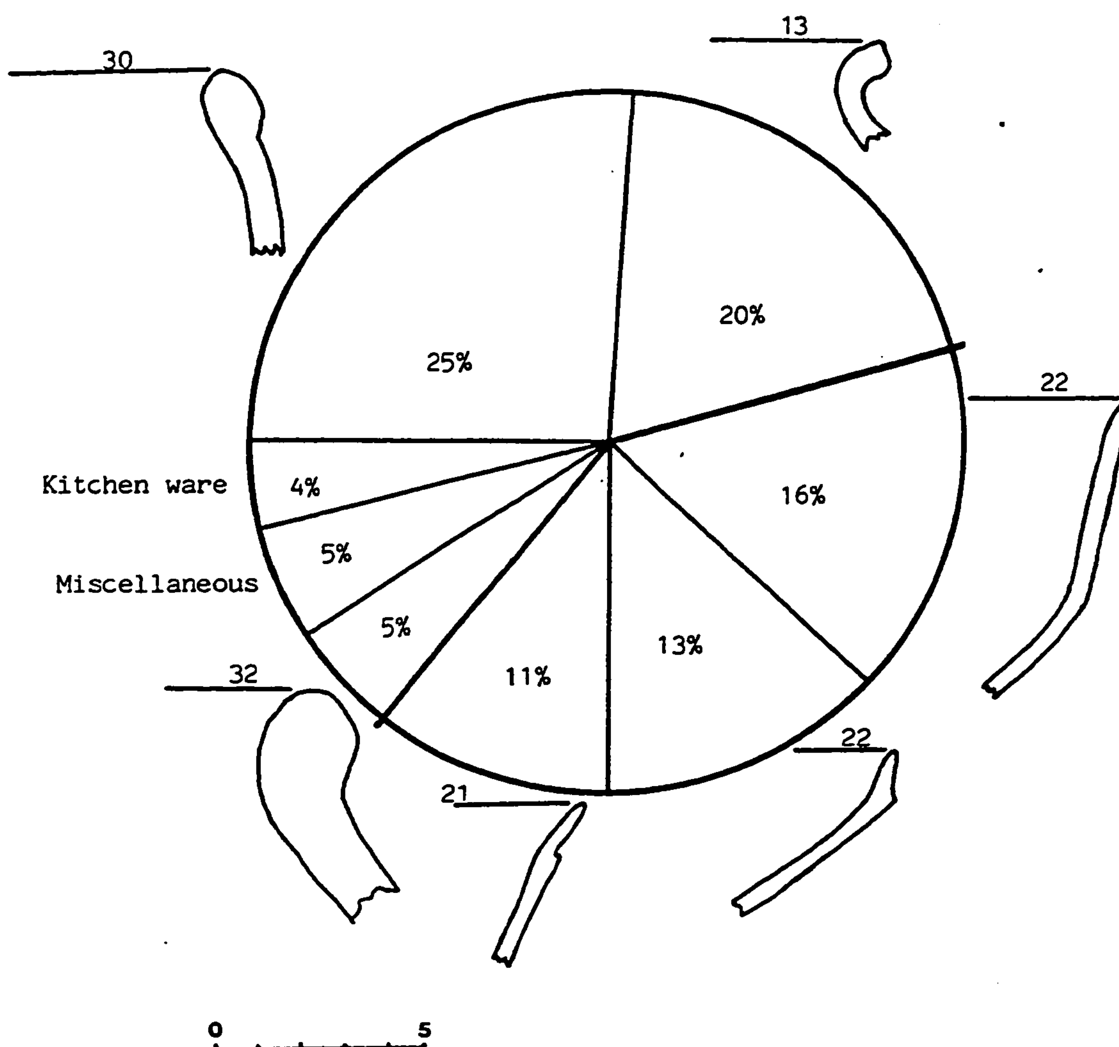


Figure 3.7: Percentages of ceramics from Period 1 (layers 1-4) of the deep sounding, Gonur north. (n=112). Numbers above sherd illustrations are rim diameters.

Figure 3.8: Small finds from layers 1-4 Gonur north, deep sounding. Period 1: Excellent context

1. Terracotta figurine, red core, buff ext. chaff temper, hand molded, applied eyes (popped off). Locus 18.

2. Terracotta figurine, reddish-buff, chaff temper, incised decoration. Locus 20.

3. Terracotta animal figurine, red, blackened, chaff and coarse temper. Locus 22.

4. Ceramic wheel or whorl, buff, fine chaff temper, smoothed ext. Locus 15.

5. Fragment of a grey steatite dish. Locus 19.

6. Terracotta figurine fragment (arm), reddish-buff, chaff temper. Locus 30.

7. Decorated ceramic, applied piece (snake?), buffware, medium fine chaff. Locus 7.

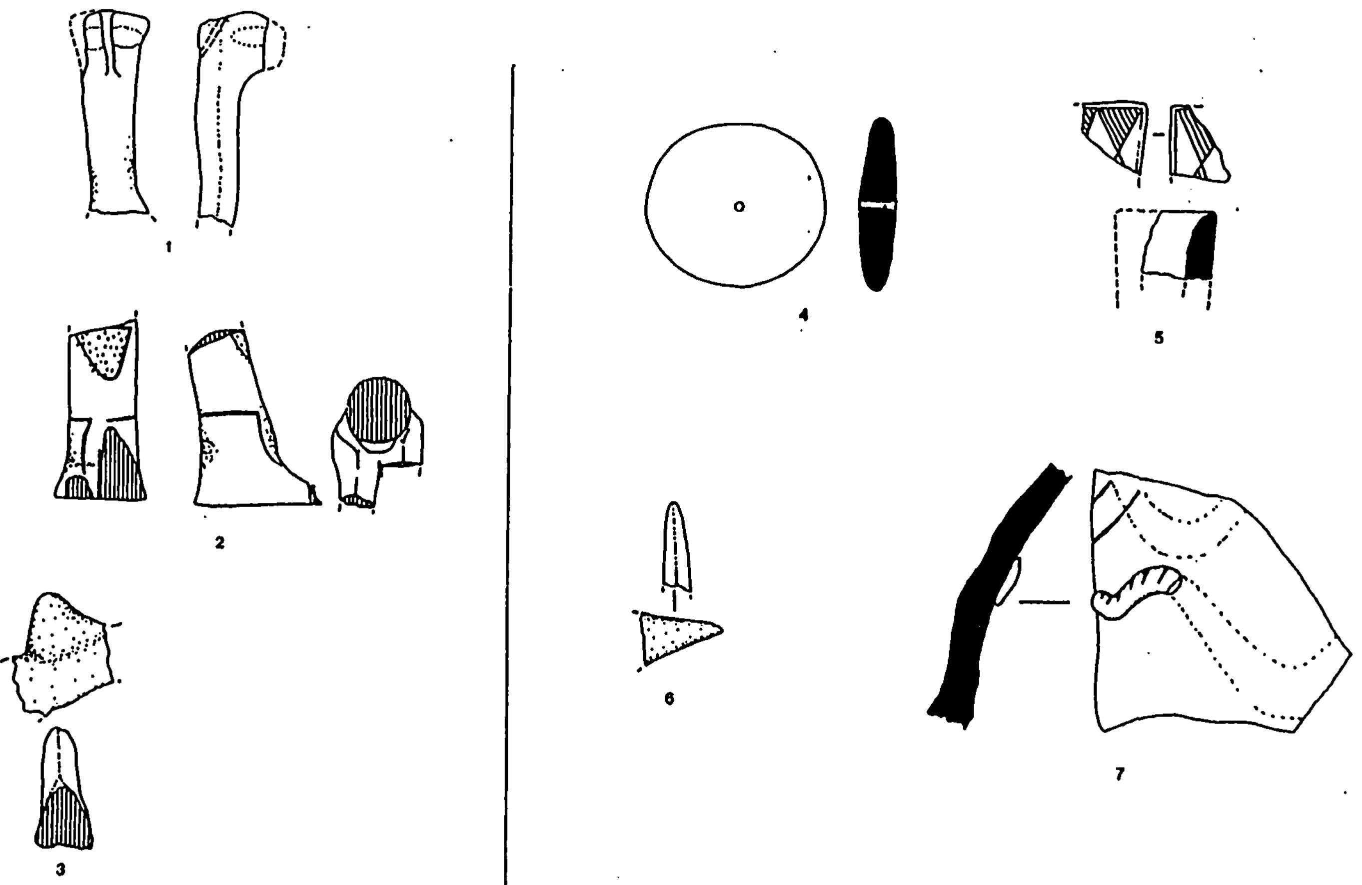


Figure 3.8: Small finds from layers 1-4 Gonur north, deep sounding. Period 1: Excellent context

Figure 3.9 Small finds from loci which pass through two layers (mixed contexts), mostly Period 1 small finds.

1. Figurine. Fine buffware. Locus 4.
2. Figurine. Fine redware, blackened by ash. Locus 5.
3. Round steatite vial with hatched triangle design. Locus 5.
4. Decorated ceramic. Medium fine chaff buffware. Locus 4.
5. Figurine. Medium fine chaff buff ware. Locus 10.
6. Sherd from perforated ceramic cylinder. Medium/medium fine chaff reddish buff ware. Locus 10.
7. Soft stone (schist?) fragment. Locus 4.
8. Alabaster vessel. Banded pinkish yellow. Locus 12.
9. Terracotta wheel. Medium fine chaff buffware. Locus 5.

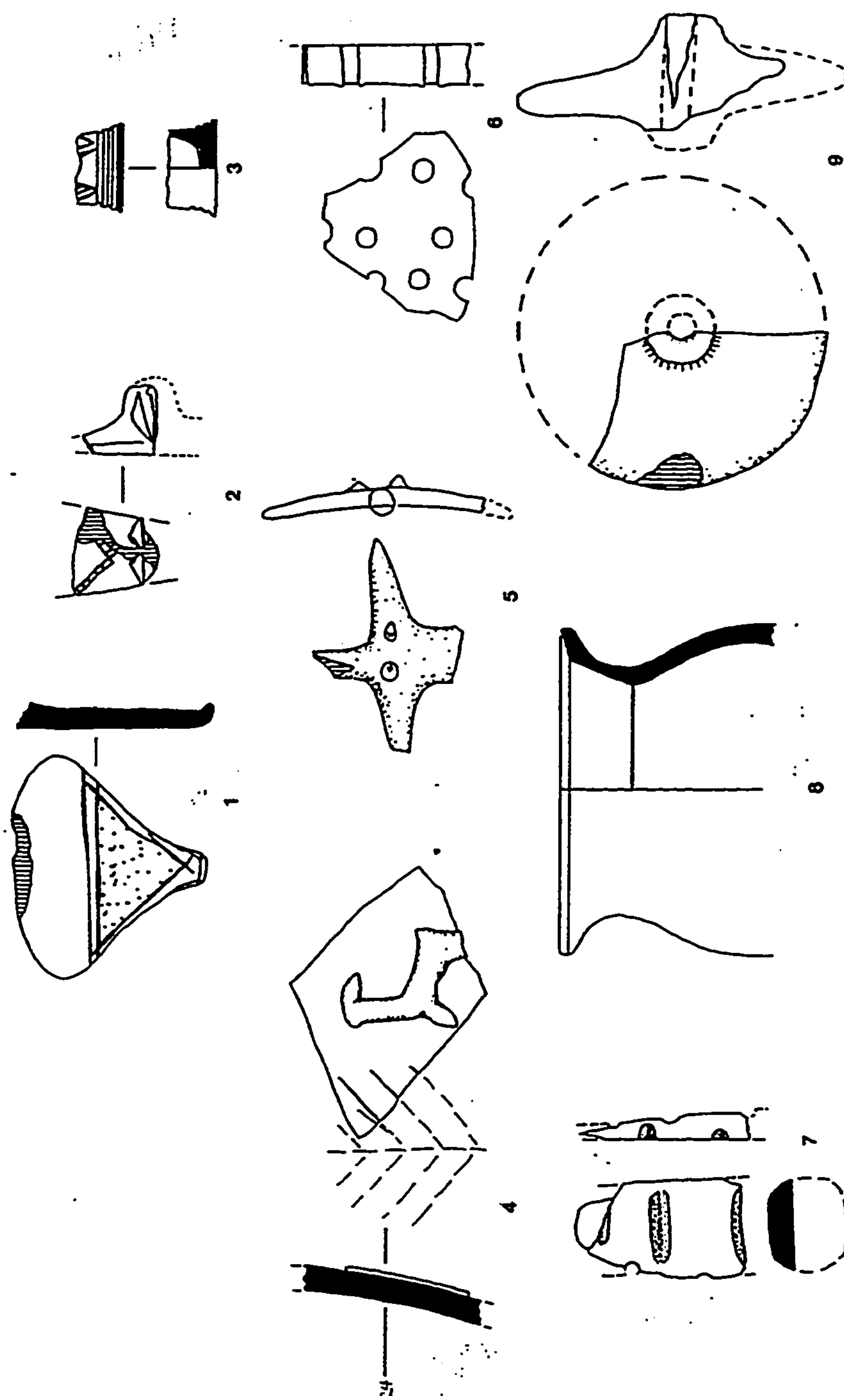


Figure 3.9 Small finds from loci which pass through two layers (mixed contexts), mostly Period 1 small finds.

Period 2

Layer 6 contained a limited assemblage of ceramics, which was clearly different from Layers 1-4. The ceramics and small finds from this layer are from the second widespread occupation at Gonur, Period 2. Ceramic forms are similar to those found from the monumental architecture at Gonur south, from the architecture and burials at Togolok 21, and from burials with BMAC artifacts at Togolok 24 (Figure 3.10). Specifically, finely made globular pots with triangular rims (and incised decoration), tall necked storage jars, and goblets are characteristic of this Period 2 ceramic assemblage in the deep sounding. Deeply burnished grey ware imports (Figure 3.11:2), incised geometric designs on ceramics (Figure 3.11:1), and stamp seal impression on the ceramics (Figure 3.11:3) were also found. Coarse "nomadic" ware may be present, but was only noted from small body sherds.

In layer 6 was found a flint arrow point (Figure 3.11:5) and a crudely modeled animal figurine. While the ceramics are similar to other areas of Period 2 at Gonur, Togolok 21, and Togolok 1, Layer 6 did not include the rich assemblage of small finds usually found in monumental architecture or in burials. Given the ceramic wasters and the lack of many small finds in the midden, the overall context of the midden appears to have been oriented to production.

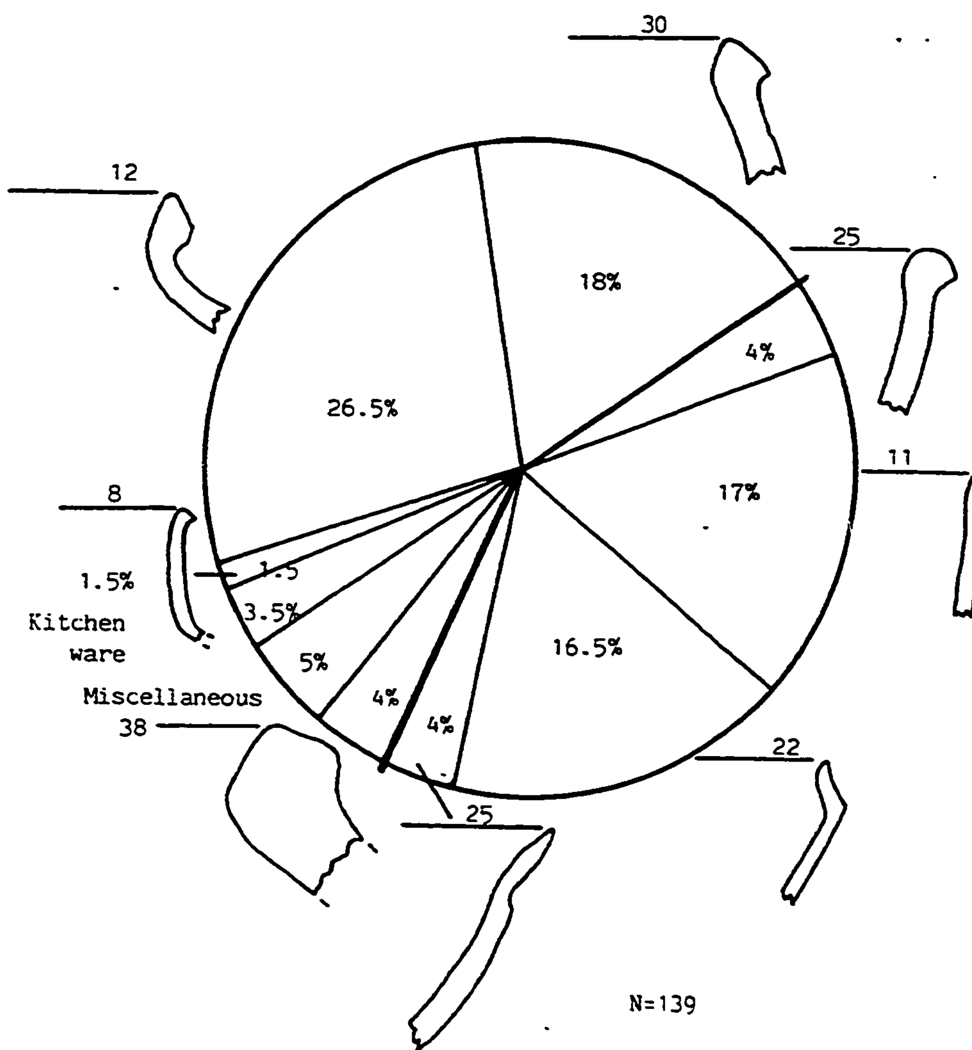


Figure 3.10: Percentages of ceramics from Period 2 (layer 6) of the deep sounding, Gonur north. (n=139). Numbers above sherd illustrations are rim diameters.

Figure 3.11: Small finds from layer 6 Gonur north, deep sounding. Period 2: Excellent context

1. Sherd from decorated vessel. Incised flower or geometric design, buffware, medium mineral temper. Locus 2.

2. Imported ceramic, burnished very dark grey ext. fine mica tempered grey ware, dark grey core. Locus 17.

3. Stamp impressed sherd, buffware, medium fine chaff. Locus 1.

4. Terracotta figurine, red, blackened by fire, poorly hand modeled, coarse temper. Locus 2.

5. Stone point or drill, greyish white chert. Locus 2.

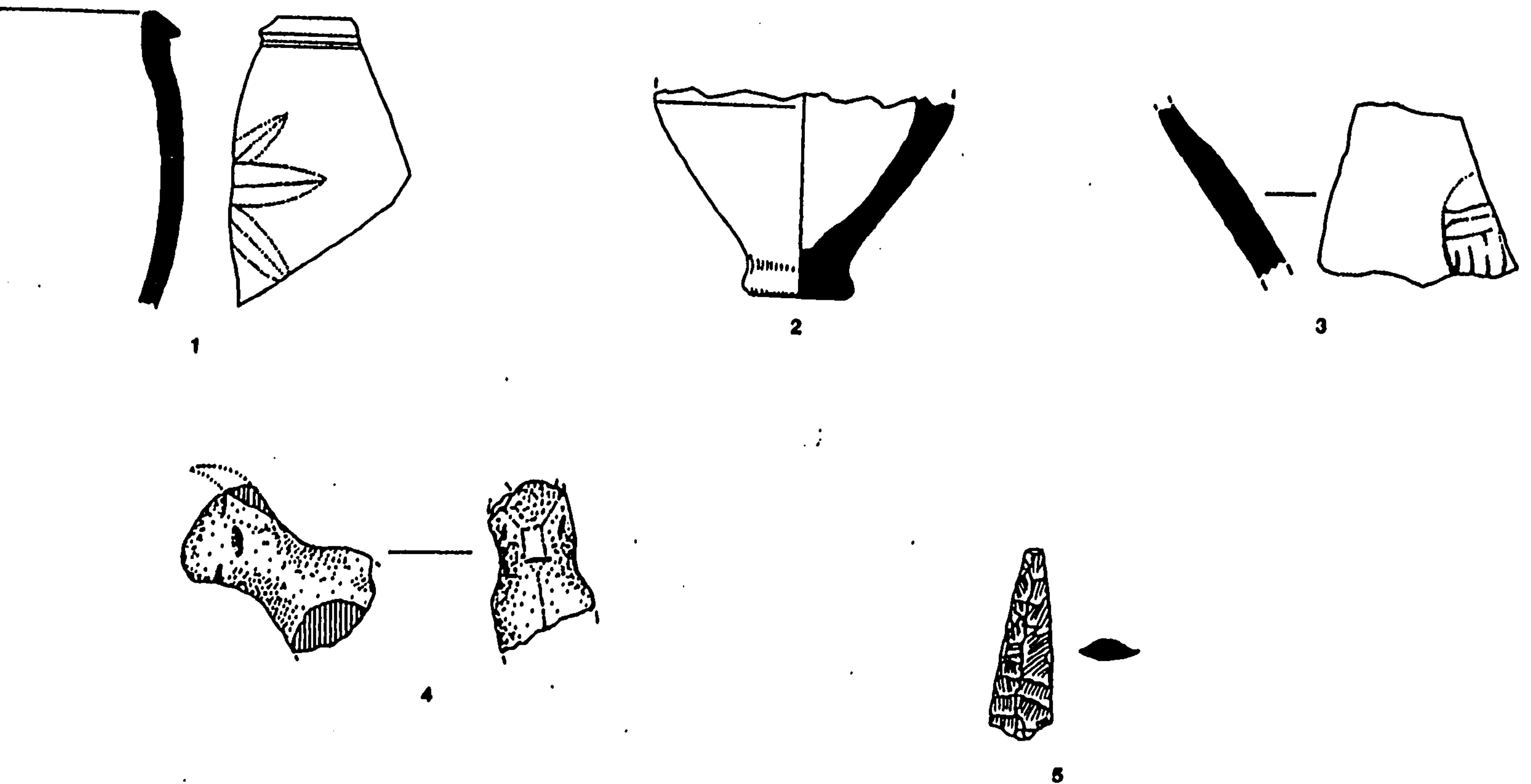


Figure 3.11: Small finds from layer 6 Gonur north, deep sounding. Period 2: Excellent context

To summarize the stratigraphy of the deep sounding at Gonur in the context of the site, we found two phases of Period 1, an architectural level and building collapse (Layers 1 and 2) built on the original hillock, and debris from cleaning out of an architectural area (Layers 3 and 4), most likely the monumental architecture 100 meters to the north. Both phases have ceramics and small finds forming a very homogenous group which are similar to finds from the kremel and from the domestic architecture on the north mound. The other excavated architecture on the north mound have Period 1 ceramics. In the "1981 excavation" and around Burial 40, architecture with small finds and ceramics similar to Period 1 of the deep sounding were found just below the surface. The Period 1 domestic architecture (described in Chapter 6) was most likely contemporary with layers 3-4 of the sounding, since it was also built above earlier layers.

Thus, during Period 1, the entire north mound was not occupied all at one time. There were areas of dumping, areas of domestic architecture and a monumental building dominating the central part of the mound. While most of the Period 1 occupation is found on the north mound, several isolated pits with Period 1 ceramics and small finds have been found beneath the architecture on the south mound.

The upper layer of the deep sounding, Layer 6, contained an assemblage of ceramics and small finds of the BMAC type.

The Gonur deep sounding is a clear example of the stratigraphic superposition of these two assemblages. Materials in Layer 6 may have come from the production areas rather than from the small Period 2 occupation found in the upper levels of the kremel. The south mound building complex, presently under investigation by the Soviet excavatcrs, contains ceramics and small finds very similar to Period 2 of the sounding, with several architectural phases.

A chronological framework, integrating ceramics, small finds and radiocarbon data allows me to evaluate the development of Margiana in a regional perspective with Bactria and the Kopet dag foothills. Within this stratigraphic framework from the deep sounding, analyses of botanical and faunal remains offer preliminary indications of the ancient economy of the Margiana oasis.

CHAPTER 4

RELATIVE CHRONOLOGY AND CERAMICS OF MARGIANA

SOVIET STUDIES ON CERAMICS

The study of ceramics in the Soviet Union has a long tradition separate from that in the West. During the 1920s statistical approaches to ceramic typology were employed to study the functions of the assemblages and aspects of exchange, and to refine the chronology (Gorodtsov 1927).

During the 1930s and 1940s these innovations in archaeological methodology were abandoned in part due to the replacement of the previous generation of trained archaeologists by a new generation of archaeologists who considered ceramic typology "bourgeois archaeology." Typology was officially abandoned for its ideological connection to western archaeology, resulting in a more interpretive approach (Miller 1960). Despite the difficult conditions during the Stalin period, the basic ceramic sequences were established using excavations of deeply stratified sites such as Altyn depe and Namazga depe.

During the late 1960's, in the then Leningrad branch of the Institute of Archaeology, a statistical approach again began to be applied to the study of Central Asian ceramics (Schentenko 1970, Masimov 1976, Udemuradov 1989). For example, at Altyn depe Kircho defined ceramic assemblages based upon sherds instead of whole vessels (Kircho 1972).

Elemental analysis and microscopic study of the paste has provided information about the technology of ceramic manufacture and paste composition (Saiko 1984).

Recent excavations in Central Asia have focused upon wide-scale horizontal exposure of architecture. The methods of studying the ceramics are based upon the use of whole ceramic forms as 'index' types, using primarily those ceramics which were found unbroken. Typologies based upon whole forms require a large number of complete vessels. In addition, it is necessary to assume that large areas of an excavated site are contemporaneous. In Margiana, the regional chronology is based upon key ceramics and artifacts from each group of sites (oases) as a unit.

Previous Margiana ceramic typologies are the work of Masimov (1981), Udemuradov (1987), Piankova (1989) and Sarianidi 1990). Sarianidi and Piankova have proposed a three period chronology for the Bronze Age of Margiana: Kelleli, Gonur, and Togolok, all subdivisions of Namazga VI. Masimov and Udemuradov propose a Period 1 (Kelleli) as Namazga V and Period 2 (Togolok/Taip) as Namazga VI. The oldest oases are located in the north, and the sites are progressively younger farther to the south.

Several Western scholars have reviewed the chronologies and have offered alternative sequences. Kohl (1984) follows Sarianidi's classification of which oases should be grouped together, but suggests earlier dating relative to the

Namazga sequence. Francfort (1989) divides the chronology into three assemblages (also called Kelleli, Gonur, and Togolok), based upon Sarianidi (1981a) but the oases, and thus, the materials grouped in each 'period' are different. The problem of the oasis as the unit of analysis is that there appear to be sites of both periods in each oasis area.

MARGIANA CHRONOLOGY IN THIS STUDY

The only way in which we can actually define a regional chronology is to classify the ceramics on a site-by-site basis. The range of types and type variants described here are derived from the wide-scale horizontal excavations at individual sites of Kelleli 3, Kelleli 4, Togolok 1, and Togolok 21, which I described briefly in Chapter 3.

In order to place the Gonur sounding in a regional chronology, it is necessary to combine the 'whole pot' typology from individual sites with the fragmentary sherd data from the deep sounding. The ceramics from the deep sounding form two groups: Period 1 which has ceramics similar to Kelleli 4 and Period 2 similar to Togolok 1 and Togolok 21. The ceramics from the Gonur deep sounding thus cover the range of variation in Bronze Age Margiana ceramics from the northern areas to the southern areas.

The basic data used in this study come from the ceramics of the Gonur deep sounding. All diagnostic sherds from the excavation were studied in order to provide an idea of

ceramic variation on a fine scale, and in order to define types by form which can be compared from site to site. Figures 4.1-4.12 portray Period 1 ceramics, and Figures 4.13-4.18 are Period 2 ceramics.

COMPARATIVE MATERIALS

The primary data from individual sites exists in the form of unpublished field reports (otcheti and opisi) located in the archives in Moscow and in Ashkhabad. Otcheti are records of the excavations from each field season and represent the basic level of data collection from Soviet excavations. They include plans of the excavated architecture, lists of the major finds of the season and their context, as well as the objectives of the excavations. Opisi are lists of ceramics and individual finds from the excavations. They provide the provenience of individual finds and include the drawings of small finds, and ceramics with descriptions of ware, temper, color, etc. These field documents, stored at the Institutes of Archaeology in Russia and in the republics form an important data base for collaborative research not often used by outside researchers. In addition, I studied collections of ceramics from the Bronze Age Margiana sites at the Institute of History and Archaeology, Ashkhabad, and in the Margiana regional museum in Bayram-Ali, Turkmenistan.

Figure 4.1.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.B	27/28	21	Buff, M.fine, Chaff
2.	2.B	27/28	15	Dark grey core, buff-grey int. & ext. : Misfire or burned, M.fine, Chaff
3.	2.B	34	14	Buff, Smoothed, M.fine, Chaff
4.	1.A	29/30	11	Red, M.fine, Chaff
5.	1.B.4	29/30	7	Red, M.fine, Chaff
6.	1.B.4	29/30	8	Red, M.fine, Chaff, Mineral
7.	1.B.4	31	7	Red, M.fine, Chaff
8.	1.B.4	29/30	8	Reddish-buff core, buff int. & ext., M.fine, Chaff
9.	1.B.4	27/28	8	Reddish-buff, M.fine, Chaff
10.	2.A	29/30	24	Buff, M.fine, Chaff
11.	2.A	29/30	15	Buff, M.fine, Chaff

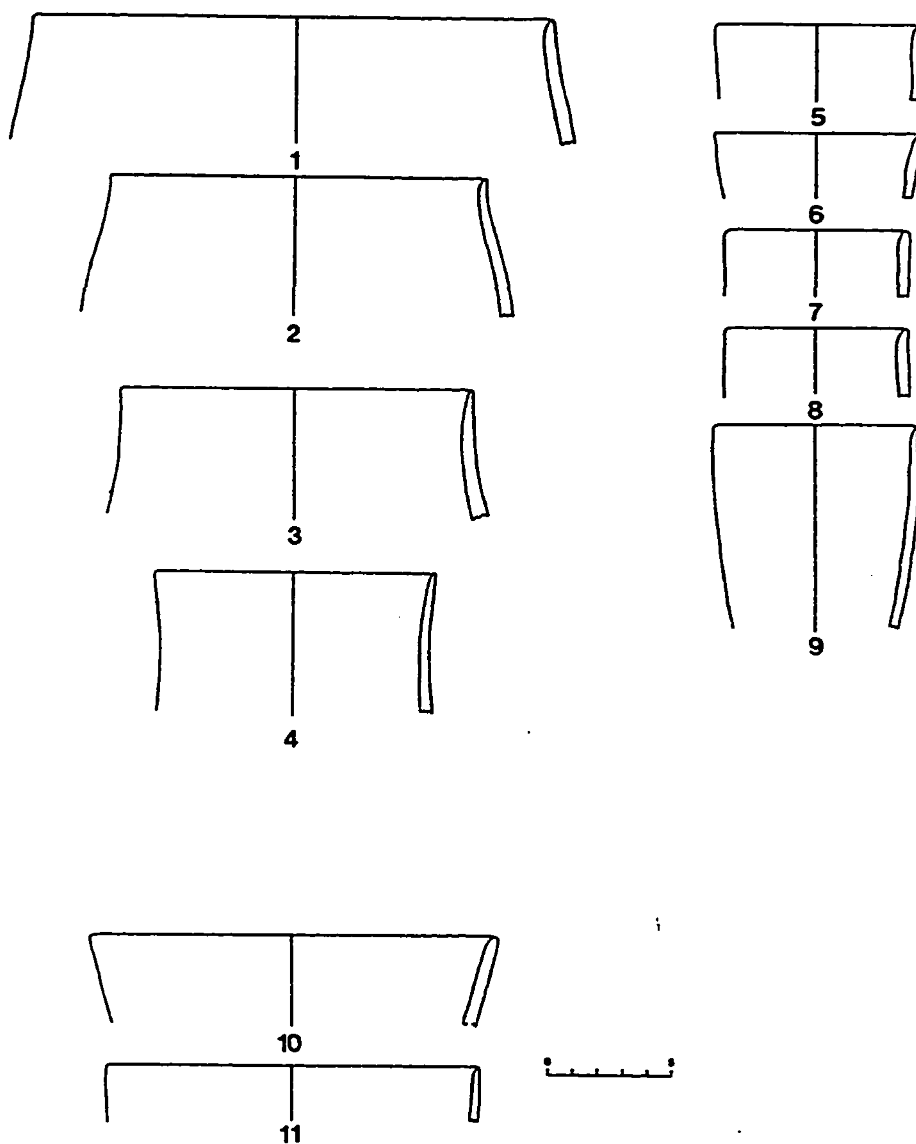


Figure 4.1 Period 1: types 1.A, 1.B.4, 2.A, 2.B

Figure 4.2.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.A.1	27/28	26	Buff, M.fine, Chaff
2.	2.A.1.2	29/30	25	Buff, M.fine, Chaff, Mineral?
3.	2.A.1.2	32	25	Red core, buff int. & ext. at rim, M.fine, Chaff
4.	2.A.1.2	27/28	22	Red, M.fine, Chaff
5.	2.A.1.2	29/30	22	Buff, M.fine, Chaff
6.	2.A.1	29/30	16	Buff w/ faint red core, Med., Chaff, Mineral?
7.	2.A.1.3	29/30	22	Red, M.fine, Chaff
8.	2.A.1.3	29/30	20	Buff, M.fine, Chaff
9.	2.A.1	27/28	16	Red core & int., buff ext., M.fine, Chaff

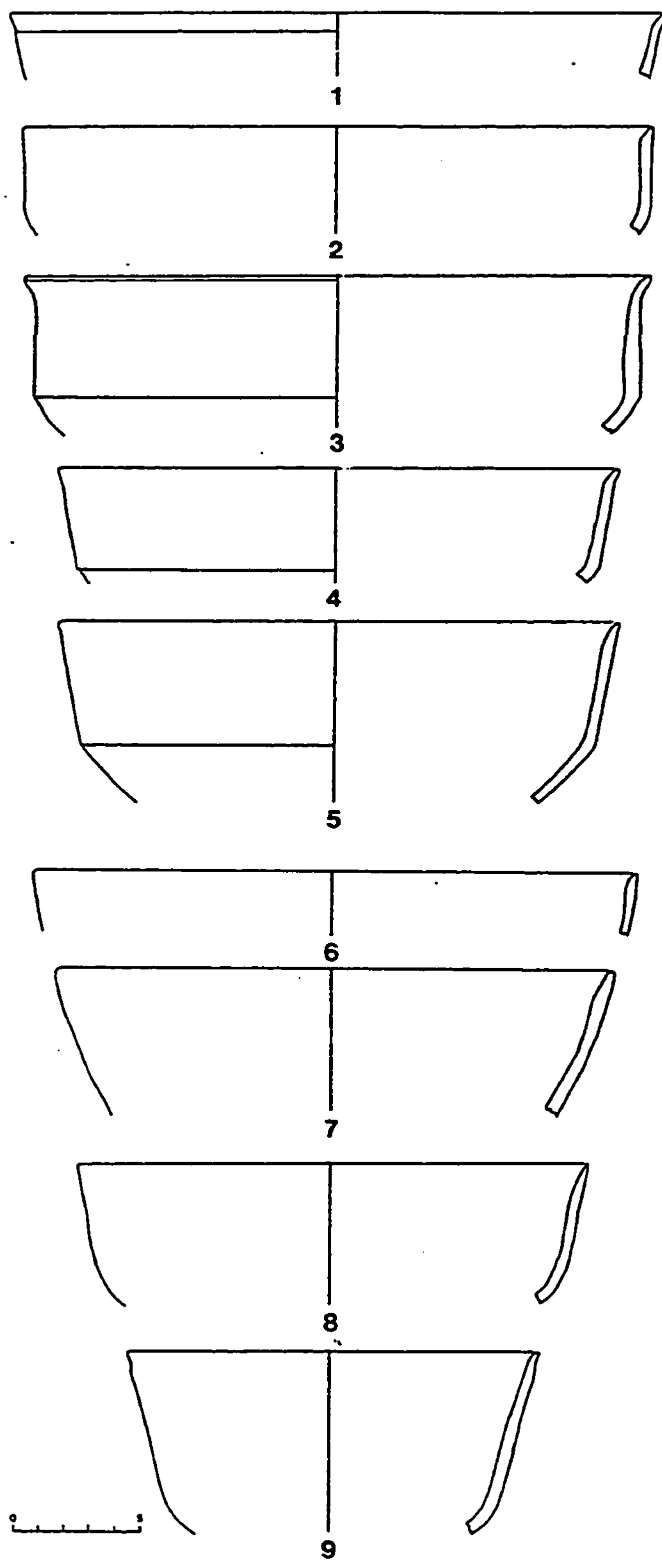


Figure 4.2 Period 1: types 2.A.1, 2.A.1.2, 2.A.1.3

Figure 4.3.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.A.2	29/30	26	Reddish-buff, M.fine, Chaff
2.	2.A.2	29/30	25	Reddish-buff core, Buff int. & ext., M.fine, Chaff
3.	2.A.2	27/28	25	Red, M.fine, Chaff
4.	2.A.2	27/28	24	Buff, M.fine, Chaff
5.	2.A.2	27/28	24	Red core, Buff int. & ext., M.fine, Chaff, Mineral?
6.	2.A.2	29/30	23	Dark red, grey ext., M.fine, Chaff
7.	2.A.2	33	22	Red core, buff int. & ext., Medium, Chaff
8.	2.A.2	33	22	Red core, buff int & ext., M.fine, Chaff
9.	2.A.2	29/30	22	Red core, buff int. & ext., M.fine, Chaff
10.	2.A.2	29/30	22	Buff, M.fine, Chaff
11.	2.A.2	29/30	22	Reddish-buff, M.fine, Chaff
12.	2.A.2	29/30	22	Red core, buff int. & ext., M.fine, Chaff
13.	2.A.2	27/28	20	Red core, Buff-red int. & ext., M.fine, Chaff
14.	2.A.2	32	23	Red core, Buff int. & ext., M.fine, Chaff

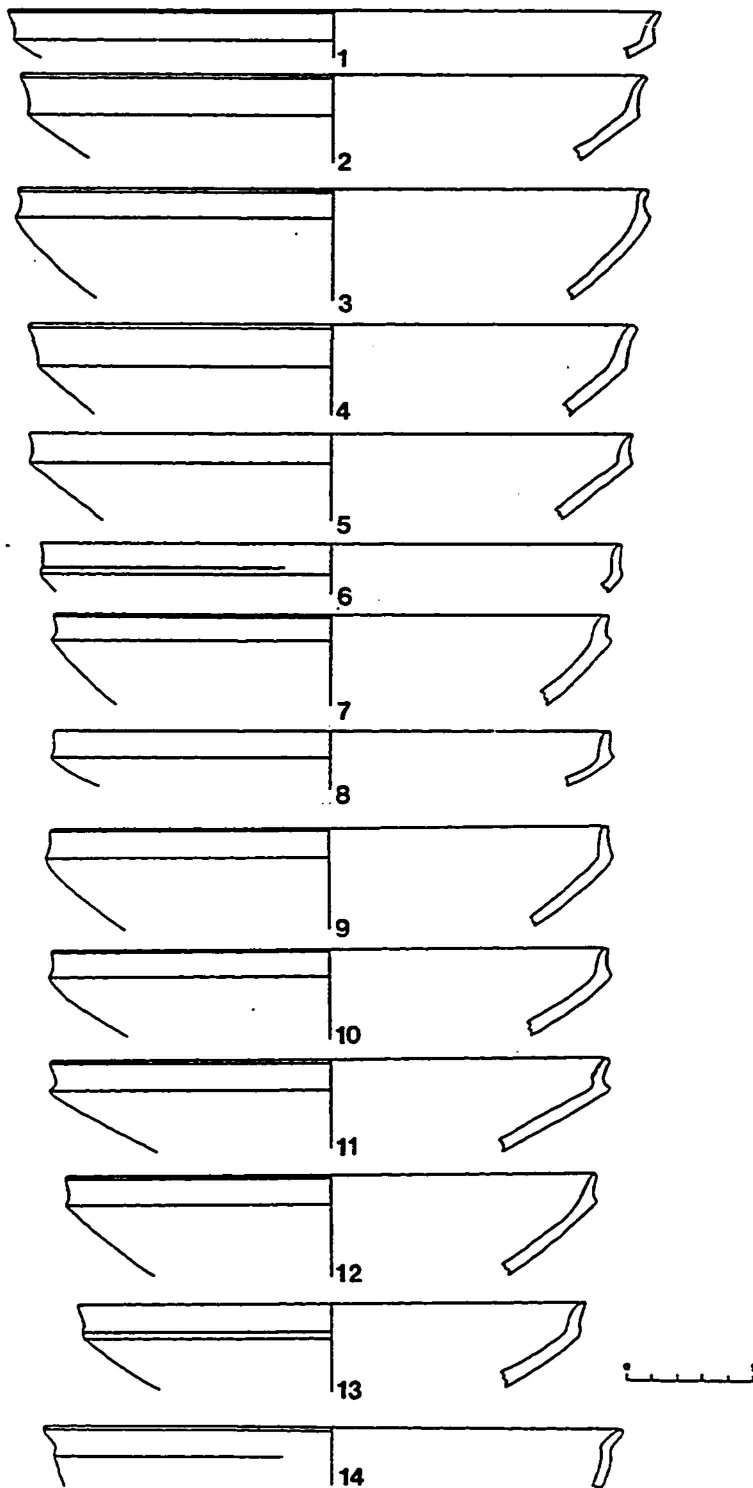


Figure 4.3 Period 1: type 2.A.2

Figure 4.4.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.A.3	27/28	30	Buff, M.fine, Chaff
2.	2.A.3	29/30	25	Greyish red core, red int. & ext., M.fine, Chaff
3.	2.A.3	29/30	25	Buff, M.fine, Chaff
4.	2.A.3	31	29	Red core, buff int. & ext., M.fine, Chaff
5.	2.A.3	27/28	28	Reddish-buff core, buff int. & ext., M.fine, Chaff
6.	2.A.3	27/28	28	Reddish-buff core, buff int. & ext., M.fine, Chaff
7.	2.A.3	29/30	24	Reddish-buff core & int., buff ext., M.fine, Chaff
8.	2.A.3	27/28	23	Red core & int., buff ext., M.fine, Chaff
9.	2.A.3	27/28	22	Reddish-buff core, buff int. & ext., Smoothed exterior, M.fine, Chaff
10.	2.A.3	29/30	22	Reddish-buff, M.fine, Chaff
11.	2.A.3	27/28	21	Buff, M.fine, Chaff
12.	2.A.3	29/30	21	Reddish-buff core & int., buff ext., M.fine, Chaff
13.	2.A.3	29/30	20	Greyish-buff, M.fine, Chaff
14.	2.A.3	27/28	20	Reddish-buff core, buff int. & ext., M.fine, Chaff
15.	2.A.3	33	20	Reddish-buff core, buff int. & ext., M.fine, Chaff
16.	2.A.3	33	20	Reddish-buff core, buff int. & ext., Smoothed exterior, M.fine, Chaff
17.	2.A.3	32	14	Greyish-buff, Smoothed exterior, Med./M.fine, Chaff

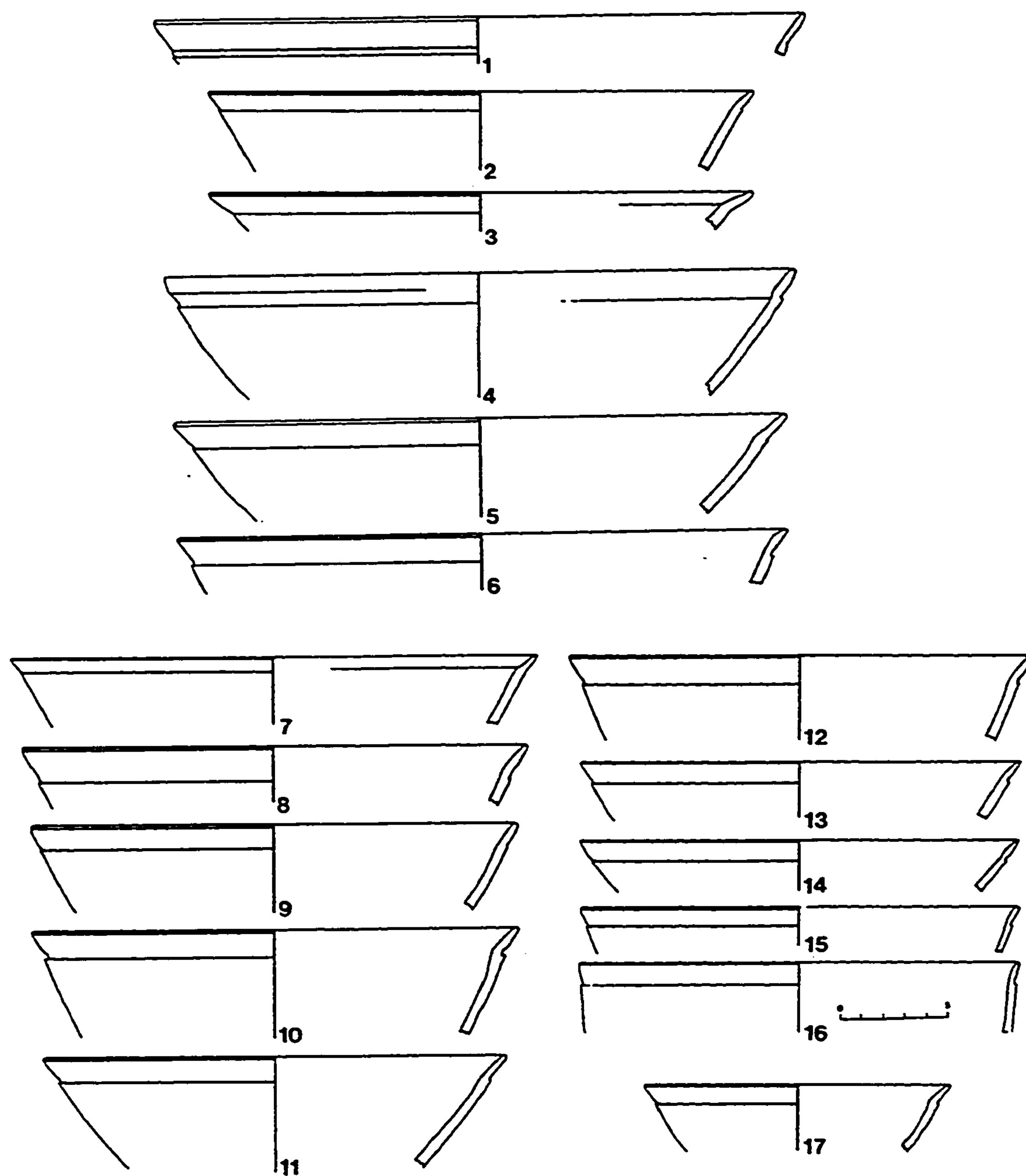


Figure 4.4 Period 1: type 2.A.3

Figure 4.5.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.A.1	29/30	38	Red core, buff int. & ext., M.fine Chaff
2.	3.A.1	27/28	38	Wide red core, buff int. & ext., M.fine, Chaff
3.	3.A.1	27/28	35	Red core, buff-red int. & ext., Med./M.fine, Chaff
4.	3.A.1	27/28	34	Greyish-buff, Smoothed exterior, Med., Chaff
5.	3.A.1	29/30	32	Buff, M.fine, Chaff
6.	3.A.1	29/30	29	Buff, M.fine, Chaff
7.	3.A.1	27/28	28	Buff-grey, M.fine, Chaff
8.	2.A.4	27/28	22	Buff, M.fine, Chaff
9.	2.A.4	29/30	24	Reddish-buff core, buff int. & ext., M.fine, Chaff
10.	2.A.4	29/30	27	Red, M.fine, Chaff

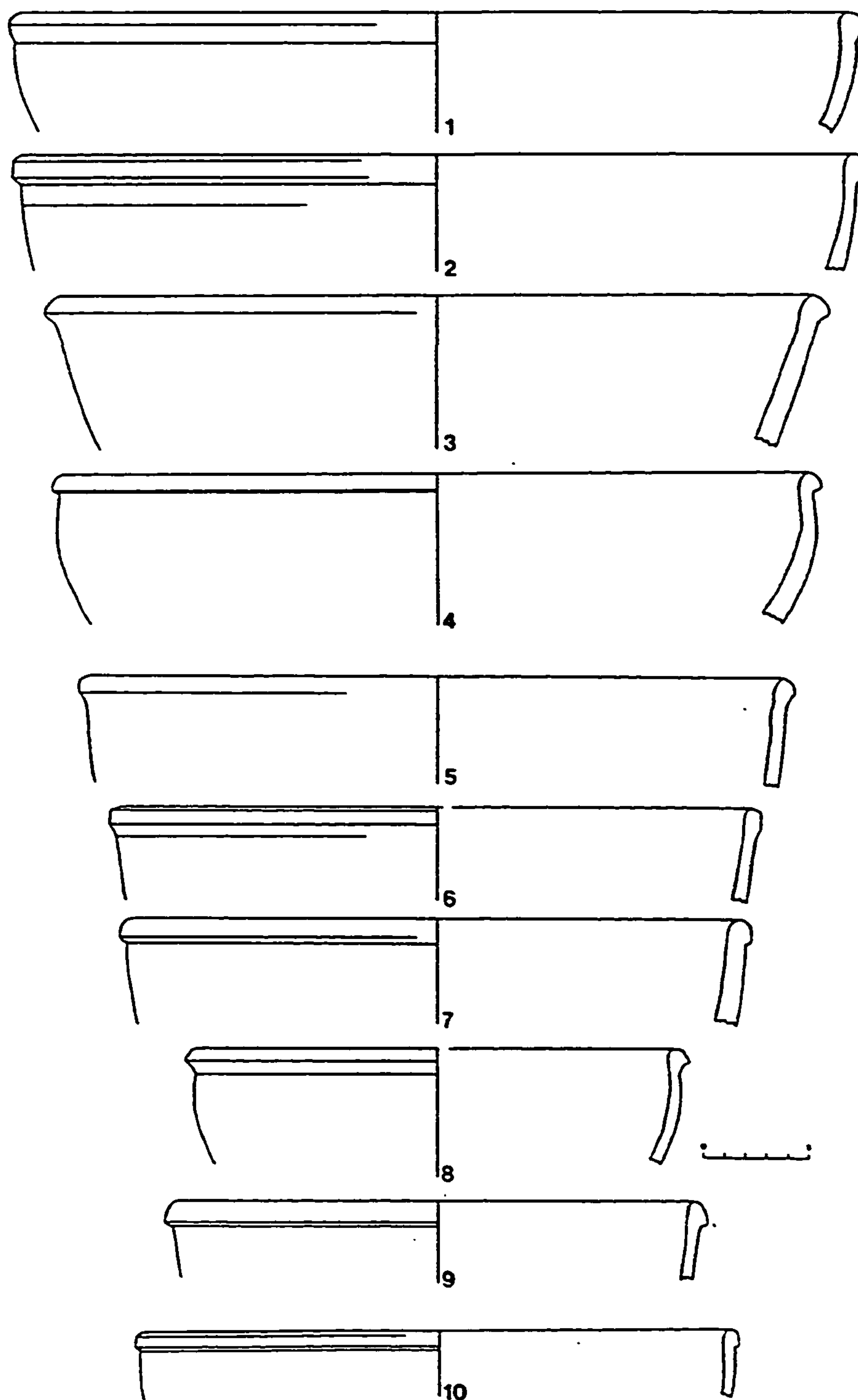


Figure 4.5 Period 1: types 2.A.4, 3.A.1

Figure 4.6.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.1	32	30	Buff, M.fine, Chaff
2.	3.B.1	27/28	30	Reddish-buff, M.fine, Chaff
3.	3.B.1	29/30	30	Buff, M.fine, Chaff
4.	3.B.1	29/30	30	Red core, buff int. & ext., Medium, Chaff & mineral
5.	3.B.1	29/30	30	Reddish-buff, M.fine, Chaff
6.	3.B.1	29/30	30	Waster: vitrified greenish grey core, yellowish-green int. & ext.
7.	3.B.1	27/28	27	Red core, reddish-buff int. & ext., M.fine, Chaff
8.	2.B.2	27/28	22	Red core and int., buff ext., M.fine, Chaff

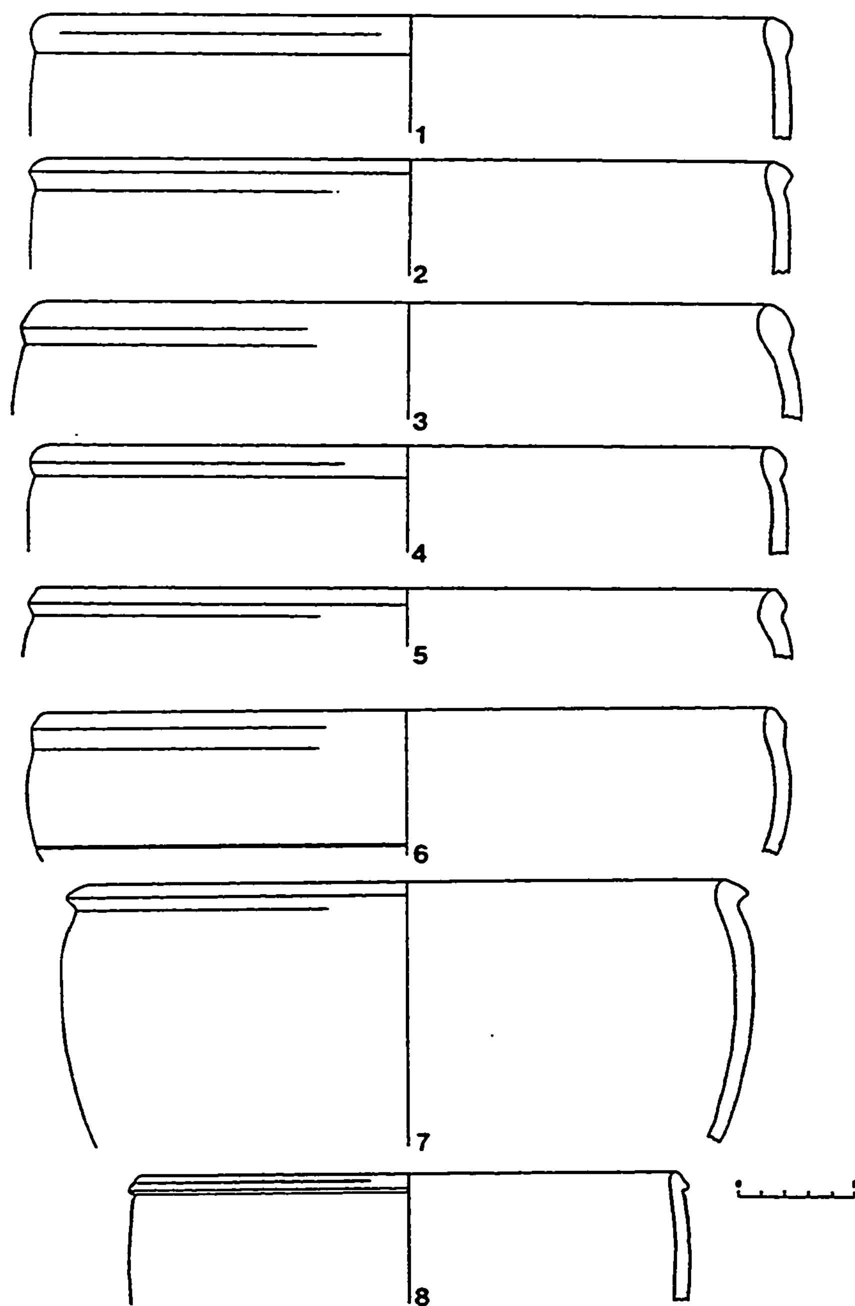


Figure 4.6 Period 1: types 2.B.2, 3.B.1

Figure 4.7.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.1	29/30	36	Greyish-buff, Medium, Chaff & mineral
2.	3.B.1	29/30	35	Buff with thin red core, M.fine, Chaff
3.	3.B.1	29/30	34	Red core, buff int. & ext., M.fine, Chaff
4.	3.B.1	29/30	34	Red core, buff int. & ext., M.fine, Chaff
5.	3.B.1	29/30	34	Reddish brown core, buff int. & ext., M.fine, Chaff
6.	3.B.1	27/28	32	Red core, buff int. & ext., M.fine, Chaff
7.	3.B.1	27/28	32	Red core, buff int. & ext., M.fine, Chaff
8.	3.B.1	32	32	Buff-red core, buff int. & ext. M.fine, Chaff
9.	3.B.1	27/28	32	Buff, Medium, Chaff, Mineral?

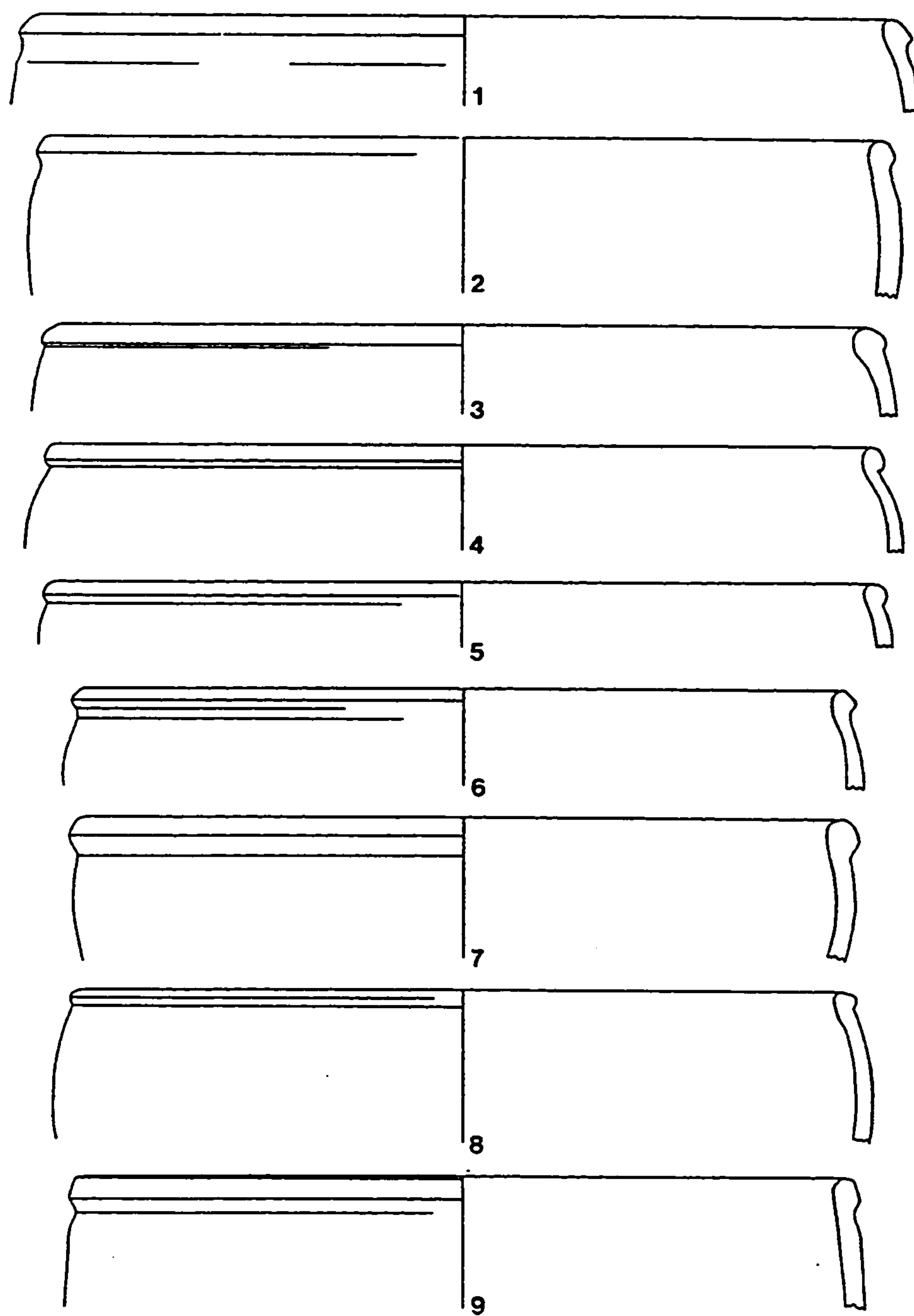


Figure 4.7 Period 1: type 3.B.1

Figure 4.8.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.2	29/30	17	Red core and surface with buff layer on ext. rim, M.fine, Chaff
2.	3.B.2	29/30	17	Buff, M.fine, Chaff
3.	3.B.2	27/28	16	Reddish-buff, finely made, M.fine, Chaff
4.	3.B.2	29/30	16	Dk. greyish-brown core, greyish-buff int. & ext., M.fine, Chaff
5.	3.B.2	29/30	16	Buff, M.fine, Chaff
6.	3.B.2	33	17	Buff, M.fine, Chaff
7.	3.B.2	29/30	15	Buff, M.fine, Chaff
8.	3.B.2	29/30	13	Reddish-buff, M.fine, Chaff
9.	3.B.2	29/30	16	Buff, M.fine, Chaff
10.	3.B.2	27/28	15	Red core, buff int. & ext., M.fine, Chaff
11.	3.B.2	27/28	13	Red core, buff int. & ext., M.fine, Chaff
12.	2.B.3	29/30	12	Red core, buff int. & ext., M.fine, Chaff
13.	2.B.3	29/30	12	Red core, buff int. & ext., Smoothed exterior, M.fine, Chaff

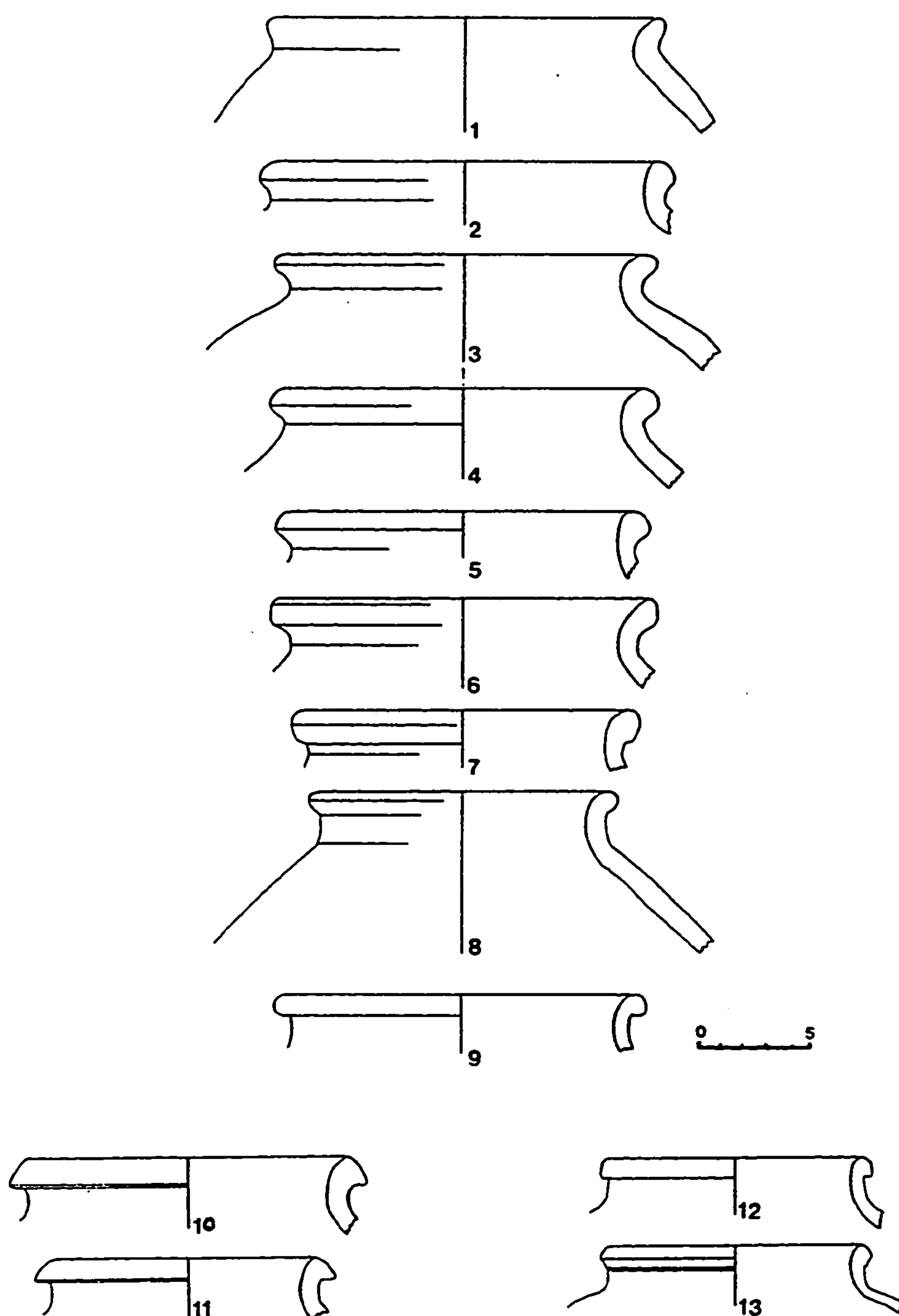


Figure 4.8 Period 1: types 2.B.3, 3.B.2

Figure 4.9.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.B.3	27/28	14	Red, M.fine, Chaff
2.	2.B.3	27/28	12	Waster: deformed, blue-green core, buff-green int. & ext., M.fine.
3.	2.B.3	27/28	10	Buff w/ faint red core, M. fine, Chaff
4.	2.B.3	27/28	14	Buff, M.fine, Chaff
5.	2.B.3	29/30	13	Buff, M.fine, Chaff
6.	2.B.3	29/30	11	Reddish-buff, M.fine, Chaff
7.	2.B.3	27/28	10	Reddish-buff, M.Fine, Chaff
8.	2.B.3	33	11	Reddish-buff core, buff int. & ext., M.fine, Chaff
9.	3.A	29/30	26	Red core, reddish-buff int. & ext., M.Fine, Chaff

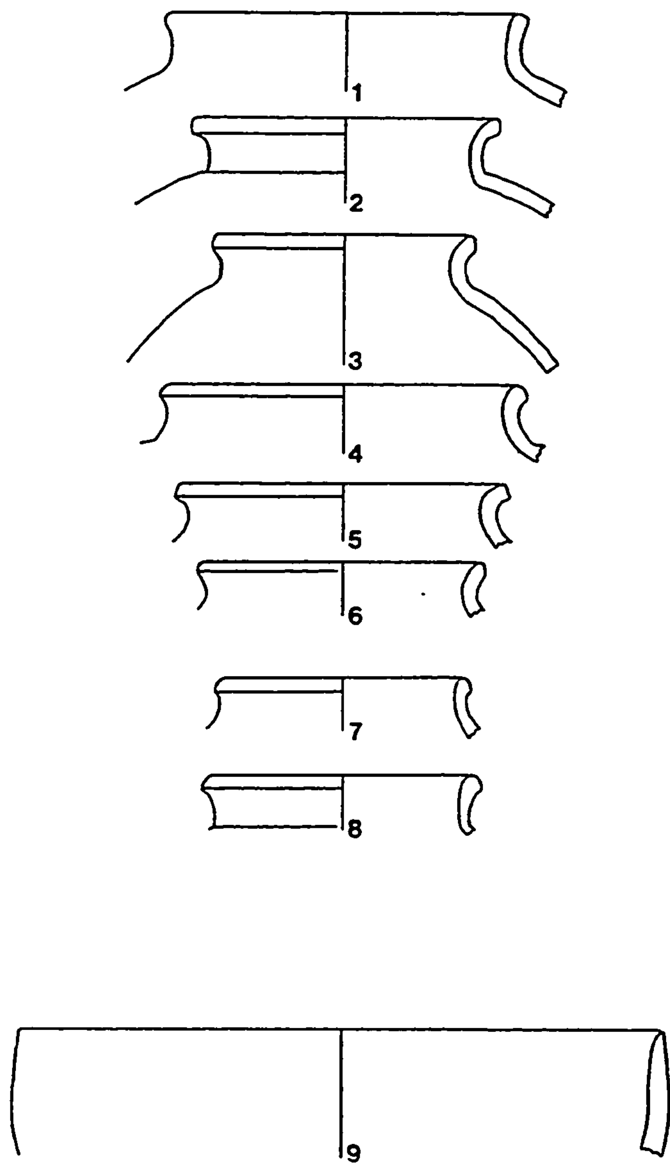


Figure 4.9 Period 1: types 2.B.3, 3.A

Figure 4.10.

No.	Type	Locus	Dia.	Ware and Temper
1.	4.B	29/30	40	Buff, Medium, Chaff, Mineral?
2.	4.B	27/28	40	Reddish-buff, M.fine, Chaff
3.	4.B	29/30	38	Red core, buff int. & ext., M.fine, Chaff
4.	4.B	27/28	34	Buff, Medium, Chaff
5.	4.B	29/30	32	Greyish-buff, M.fine, Chaff
6.	4.A	27/28	45	Buff-red core, buff int. & ext., M.fine, Chaff
7.	4.A	27/28	45	Buff w/ faint red core, M.fine, Chaff

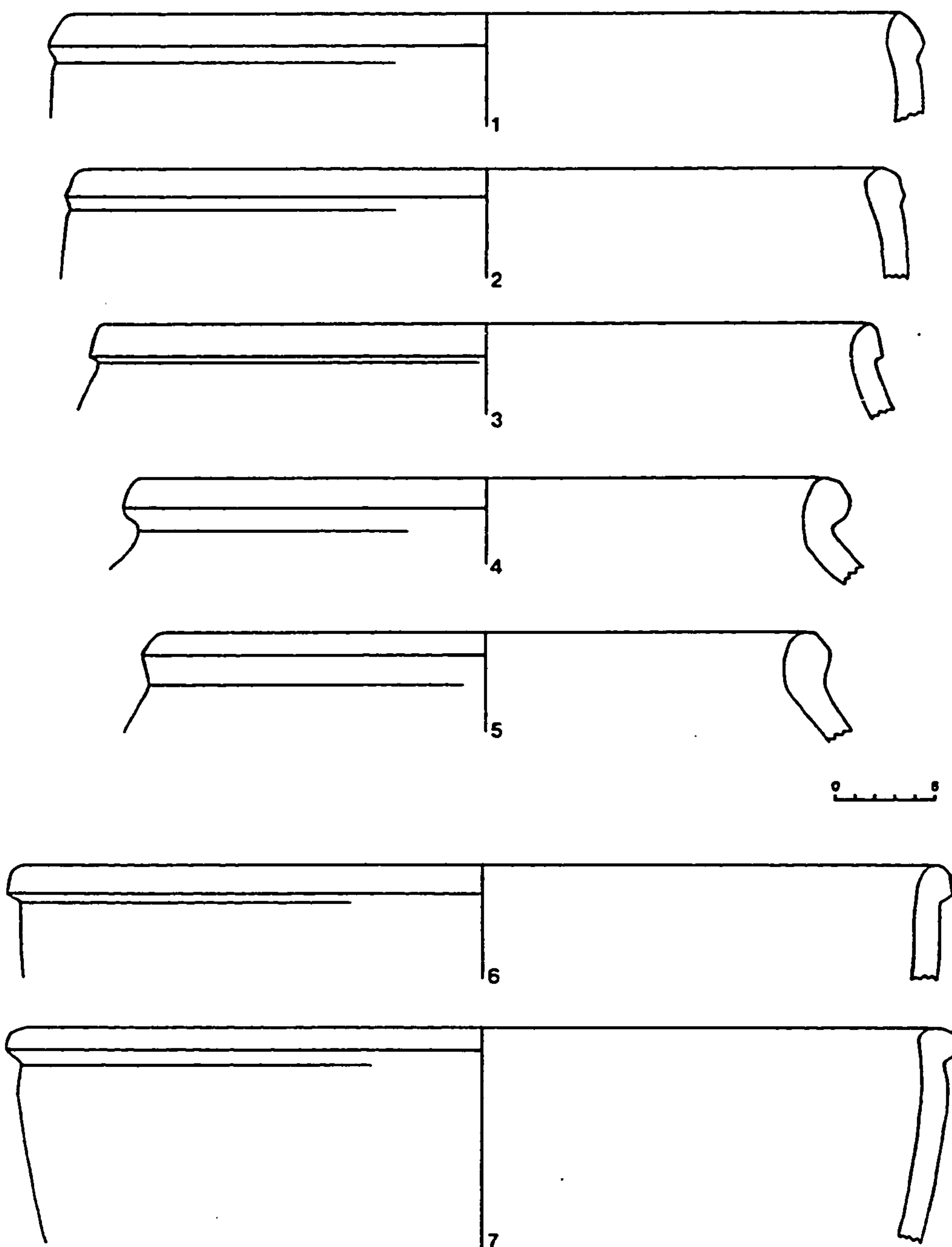


Figure 4.10 Period 1: types 4.A, 4.B

Figure 4.11.

No.	Type	Locus	Dia.	Ware and Temper
1.	4.B	27/28	50	Red core, buff int. & ext., Medium, Chaff
2.	4.B	27/28	45	Red core, buff int. & ext., M.fine, Chaff
3.	4.B	27/28	45	Buff, Medium, Chaff

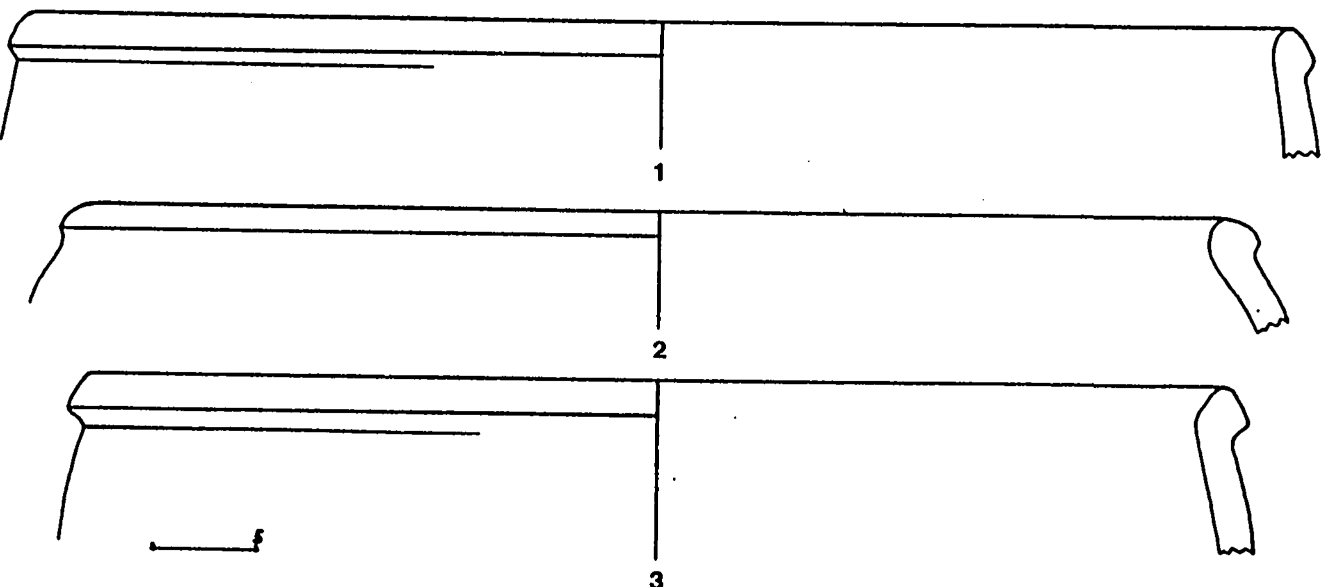


Figure 4.11 Period 1: type 4.B

Figure 4.12.

No.	Type	Locus	Dia.	Ware and Temper
1.	"Kitchen"	29/30	8	Hand-made, Buff-red ext., reddish-grey int., Coarse, Grog temper
2.	"Kitchen"	29/30	12	Hand-made, Dk. red ext., reddish grey int., Coarse, Grog temper
3.	2.A	31	14	Red core and int., buff ext., M.fine, Chaff
4.	2.A	32	11	Buff w/ buff-red core, Medium, Chaff
5.	3.A	33	9	Red core, buff int. & ext., Base string-cut and shaved, M.fine, Chaff
6.	1.B.4	33	7	Red core, buff int. & ext., String-cut base, Medium/M.fine Chaff
7.	2.B.1	32	6	Reddish-buff, Smoothed ext. & base, Medium/M.fine, Chaff
8.	3	33	8	Red, Sand molded & sand int., M.fine, Chaff
9.	3	33	10	Greyish-buff core, buff int. & ext., Sand molded, base shaved, M.fine, Chaff
10.	3	31	12	Buff, Sand molded, mold wrinkles on base, M.fine, Chaff
11.	3	34	12	Red core & int., buff ext., Sand molded, Medium, Chaff
12.	3	31	13	Reddish-buff core & int., buff ext., Sand molded, Medium, Chaff
13.	3	31	17	Red core & int., buff ext., Sand molded, worn on base, M.fine, Chaff

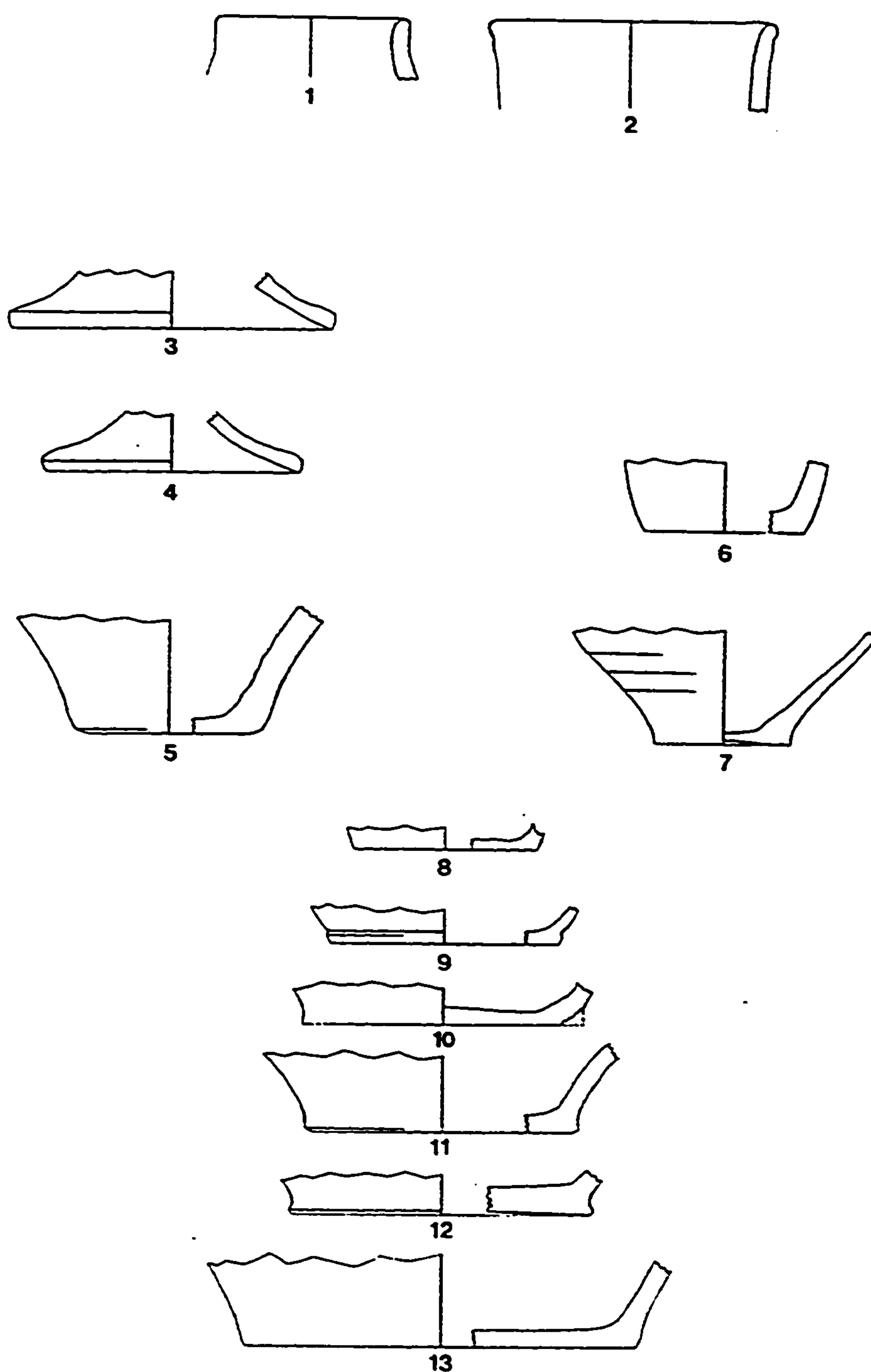


Figure 4.12 Period 1: Handmade "kitchen"ware, wheelmade bases

Figure 4.13.

No.	Type	Locus	Dia.	Ware and Temper
1.	1.A.3	2	12	Grey core & int., lt. grey ext., M.fine, Chaff
2.	1.A.3	2	15	Red core, buff int. & ext., M.fine, Chaff
3.	1.A.3	17	15	
4.	2.A.4	2	20	Reddish-buff core, buff int. & ext., M.fine, Chaff
5.	2.A.4	2	21	Red w/ intensely red core & int., v. worn rim, M.fine, Chaff
6.	2.A.4	2	22	Red, buff int. & ext., M.fine, Chaff
7.	2.A.4	2	23	Reddish-buff core, buff int. & ext., M.fine, Chaff
8.	2.A.4	2	21	Red, intensely red core, M.fine, Chaff
9.	2.A.4	2	20	Buff, M.fine, Chaff
10.	2.A.3	2	27	Buff, M.fine, Chaff
11.	2.A.3	2	25	Red, M.fine, Chaff
12.	2.A.3	2	20	Buff, M.fine, Chaff, Mineral
13.	2.A.3	2	17	Reddish-buff core, grey int. & ext., M.fine, Chaff

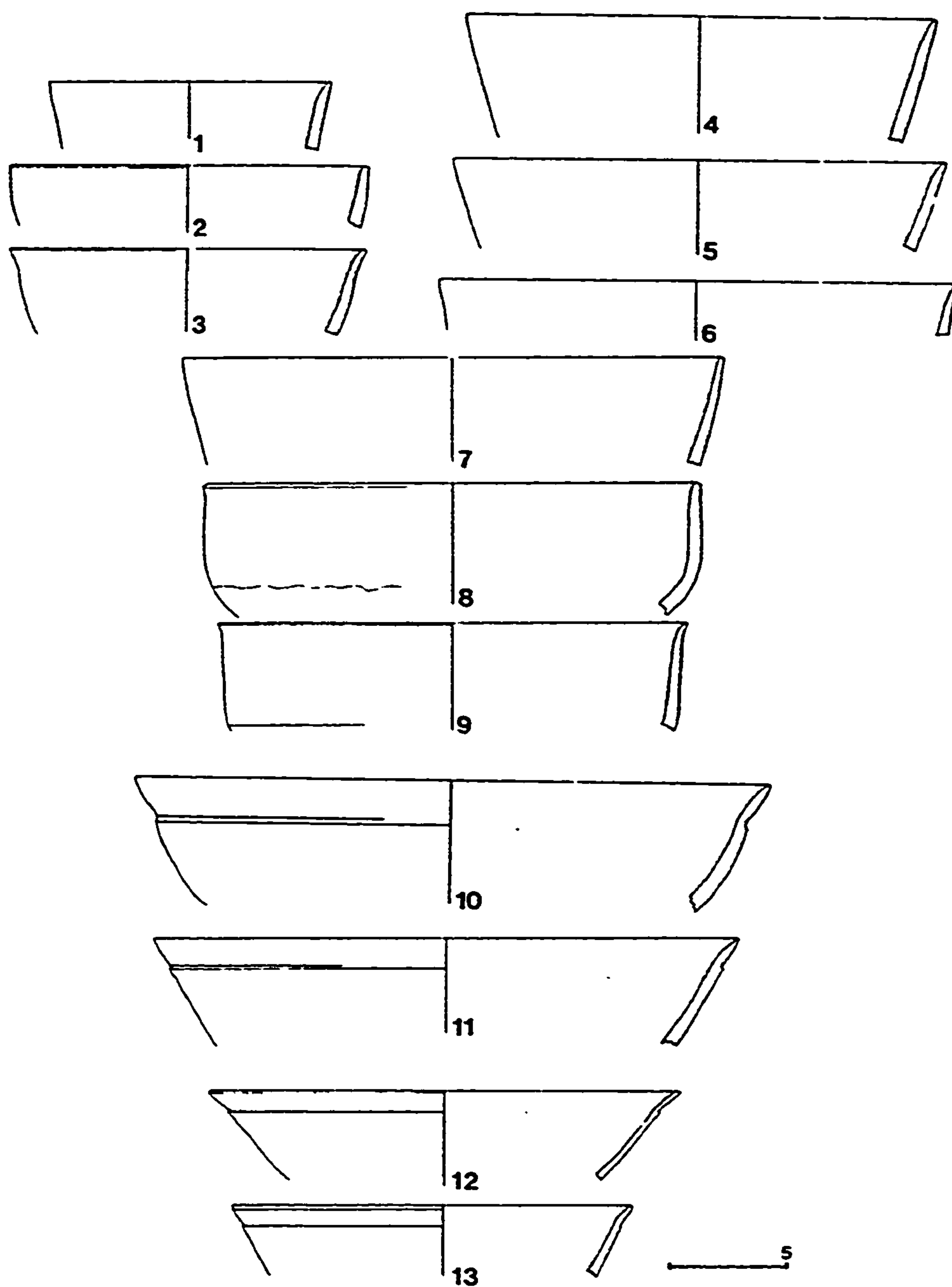


Figure 4.13 Period 2: types 1.A.3, 2.A.3, 2.A.4

Figure 4.14.

No.	Type	Locus	Dia.	Ware and Temper
1.	2.B.2	2	28	Brown core, grey int. & ext.: misfire?, M.fine, Chaff
2.	2.A.2	2	20	Red, M.fine, Chaff
3.	2.A.2	2	25	Reddish-buff, M.fine, Chaff, mineral
4.	2.A.2	2	25	Red core, buff int. & ext., M.fine, Chaff
5.	2.A.2	2	25	Reddish buff core, buff int. & ext., M.fine, Chaff
6.	2.A.2	2	25	Buff, M.fine, Chaff
7.	2.A.2	2	28	Dk. grey: misfire?, Medium/M.fine, Chaff
8.	2.A.2	2	24	Reddish-buff, M.fine, Chaff
9.	2.A.2	2	22	Greyish-red core & int., red ext.: misfire, M.fine, Chaff
10.	2.A.2	2	30	Reddish-buff core, buff int. & ext., M.fine, Chaff
11.	6	2	32	Red core, buff int. & ext., Wheel turned, possibly foot, Medium, V. chaffy

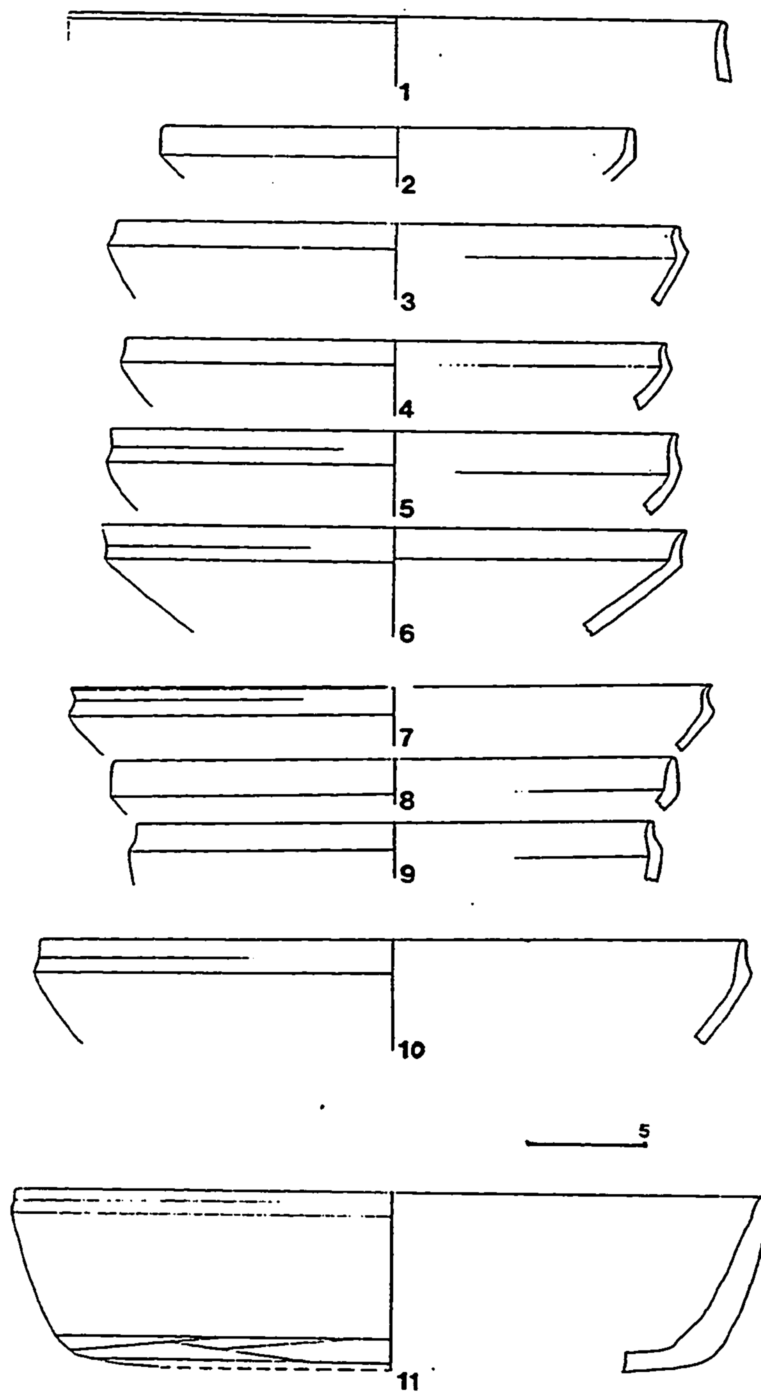


Figure 4.14 Period 2: types 2.A.2, 2.B.2, 6.

Figure 4.15.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.A.1	2	23	Buff, Medium, Chaff
2.	3.A.1	2	22	Buff w/ faint red core, M.fine, Chaff
3.	3.A.1	2	20	Reddish buff core, buff int. & ext., M.fine, Chaff
4.	3.A.1	2	20	Reddish buff core, buff int. & ext., M.fine, Chaff
5.	3.A.1	2	18	Grey: misfire?, M.fine, Chaff
6.	3.A.1	2	30	Buff, M.fine, Chaff

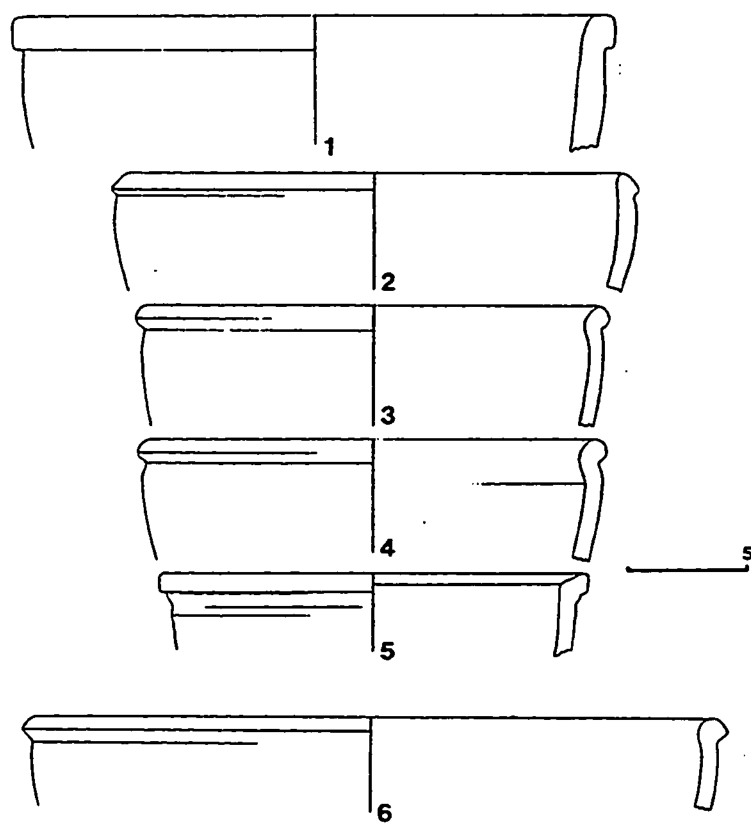


Figure 4.15 Period 2: type 3.A.1

Figure 4.16.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.1	2	25	Buff, M.fine, Chaff
2.	3.B.1	2	20	Buff, M.fine, Chaff
3.	3.B.1	2	22	Reddish buff core & int., buff ext., M.fine, Chaff
4.	3.B.1	2	18	Buff core & int., greyish-buff ext., M.fine, Chaff
5.	3.B.1	2	23	Greyish-buff, M.fine, Chaff
6.	3.B.1	2	24	Reddish-buff core, buff int. & ext., M.fine, Chaff
7.	3.B.1	2	22	Reddish buff, M.fine, Chaff
8.	3.B.1	2	24	Buff, M.fine, Chaff
9.	3.B.1	2	25	Reddish-buff w./ thin red core, Medium, Chaff
10.	3.B.1	2	26	Reddish-buff, M.fine, Chaff
11.	3.B.1	2	22	Greyish buff core & ext., buff int., M.fine, Chaff

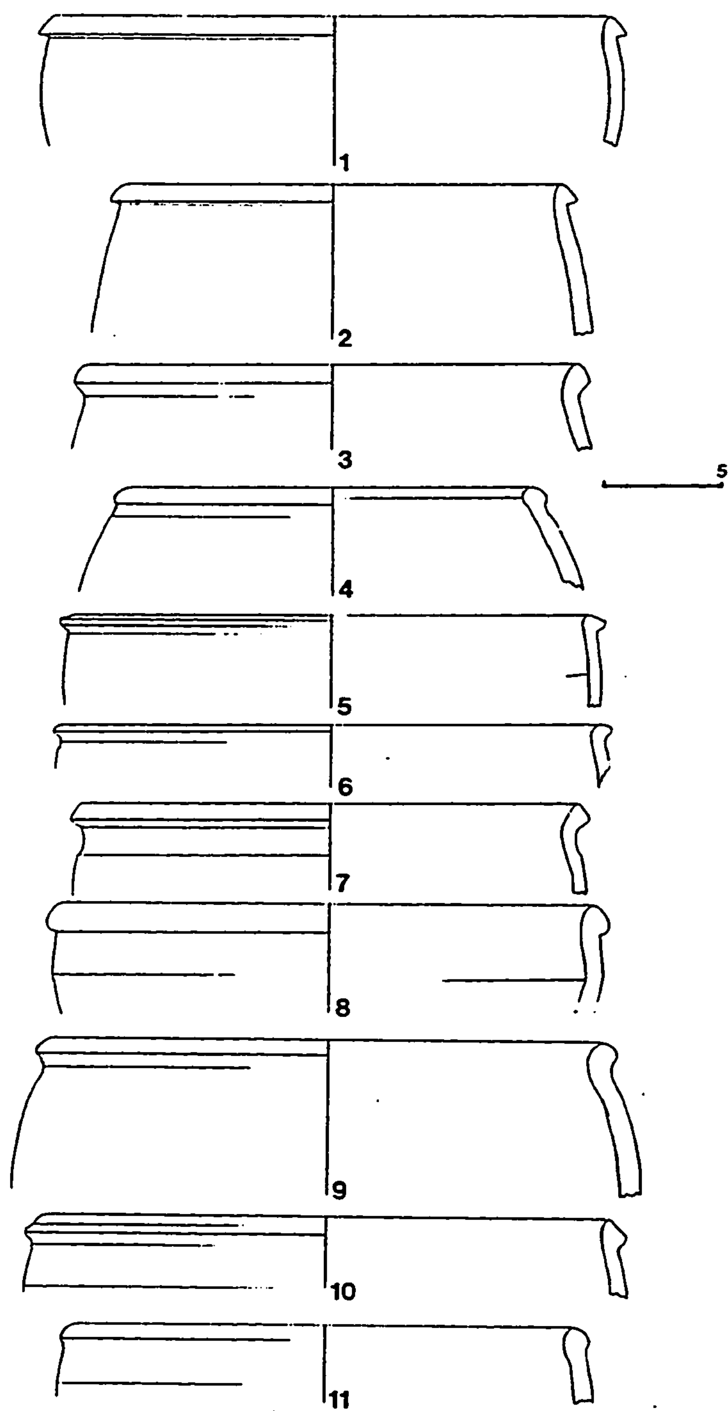


Figure 4.16 Period 2: type 3.B.1

Figure 4.17.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.1	2	21	Red ext., buff int., Smoothed, M.fine, Chaff
2.	3.B.1	2	19	Reddish-buff core, buff int. & ext., M.fine, Chaff
3.	3.B.1	2	18	Buff, M.fine, Chaff
4.	3.B.1	2	18	Red core & int., buff ext., M.fine, Chaff
5.	3.B.1	2	18	Red with intensely red ext., buff int., M.fine, Chaff
6.	3.B.1	2	29	Buff core, greyish buff int. & ext., M.fine, Chaff
7.	3.B.1	2	30	Reddish buff core & int., red ext., M.fine, Chaff
8.	4.B	2	38	Buff core, red int. & ext., M.fine, Chaff
9.	4.B	2	35	Buff, M.fine, Chaff
10.	4.B	2	40	Red core, buff int. & ext., M.fine, Chaff

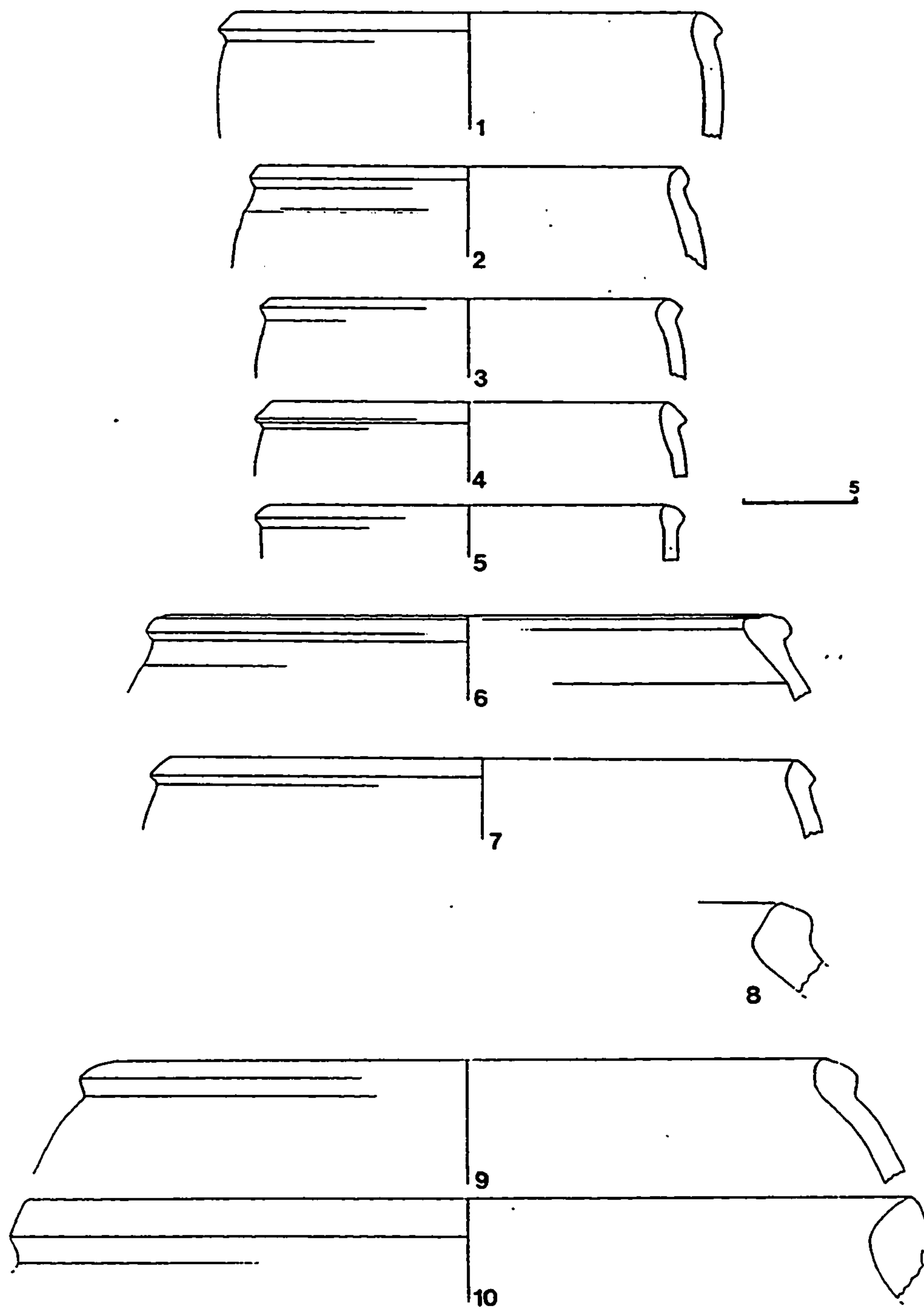


Figure 4.17 Period 2: types 3.B.1, 4.B

Figure 4.18.

No.	Type	Locus	Dia.	Ware and Temper
1.	3.B.3	2	8	Red core, buff int. & ext., M.fine, Chaff
2.	3.B.3	9	8	None given
3.	3.B.3	13	8	None given
4.	3.B.4	2	15	Buff, M.fine, Mineral
5.	3.B.4	9	15	Handmade
6.	3.B.4	2	9	Red core, buff int. & ext., M.fine, Chaff
7.	3.B.2	2	12	Buff, Medium, Sand
8.	3.B.2	2	11	Reddish-buff core, buff int. & ext., M.Fine, Chaff
9.	3.B.2	2	14	Red core, grey int., black ext. below rim, M.fine, Chaff & Mineral?
10.	3.B.2	2	11	Red core and int., buff ext. and rim, M.fine, Chaff
11.	3.B.2	2	15	Red core, buff int. & ext., M.fine, Chaff
12.	3.B.2	2	14	Red core, buff int. & ext., M.fine, Chaff
13.	3.B.2	2	11	Greyish-buff, M.fine, Chaff
14.	3.B.2	2	12	Red core, buff int. & ext., Medium/ M.fine, Chaff
15.	3.B.2	2	10	Greyish buff core and ext., dk. grey int.: misfire, Medium, Chaff and mineral
16.	3.B.2	2	12	Red core and int., buff ext., M.fine, Chaff
17.	3.B.2	2	14	Buff, M.fine, Chaff

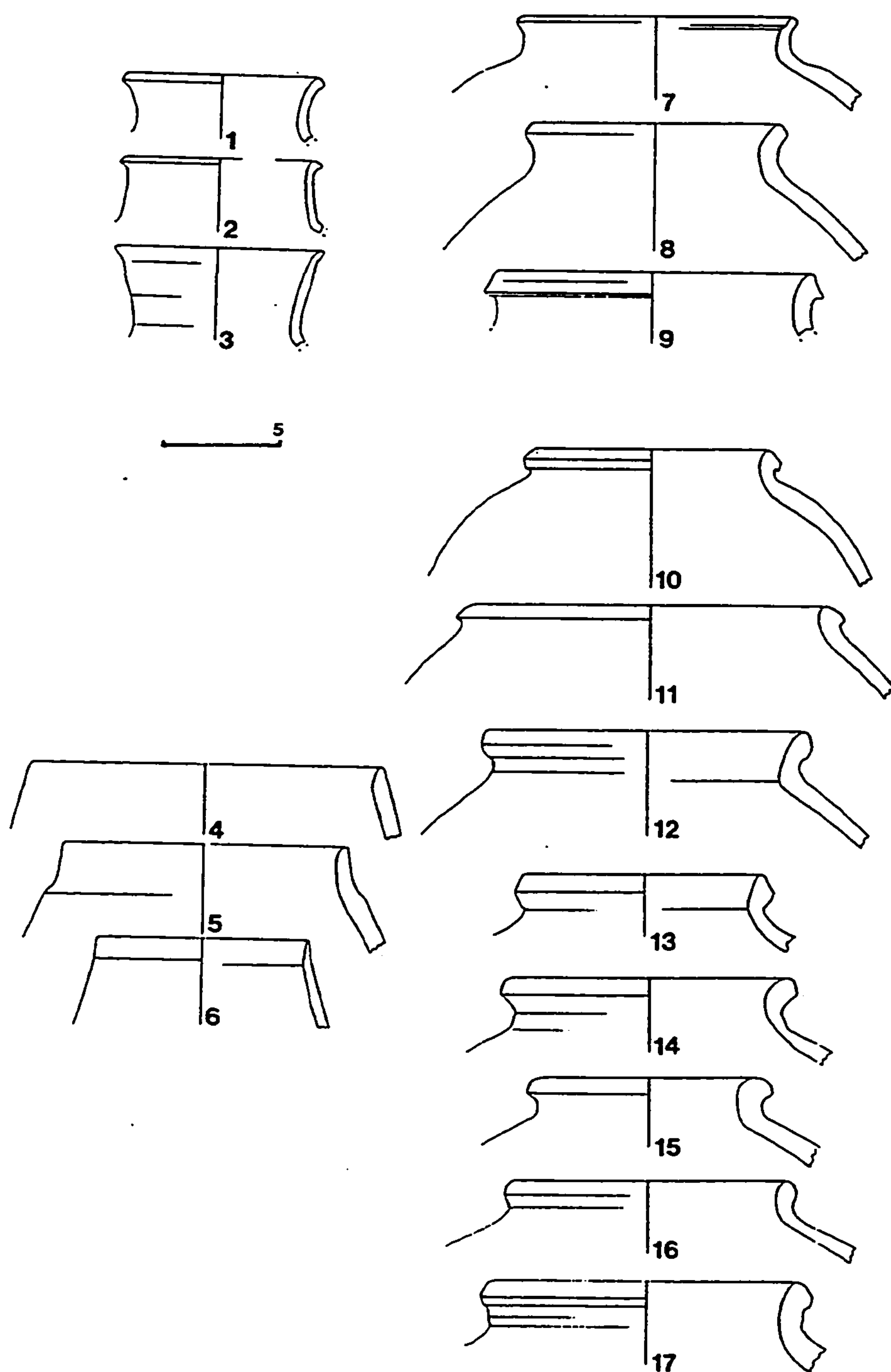


Figure 4.18 Period 2: types 3.B.2, 3.B.3, 3.B.4

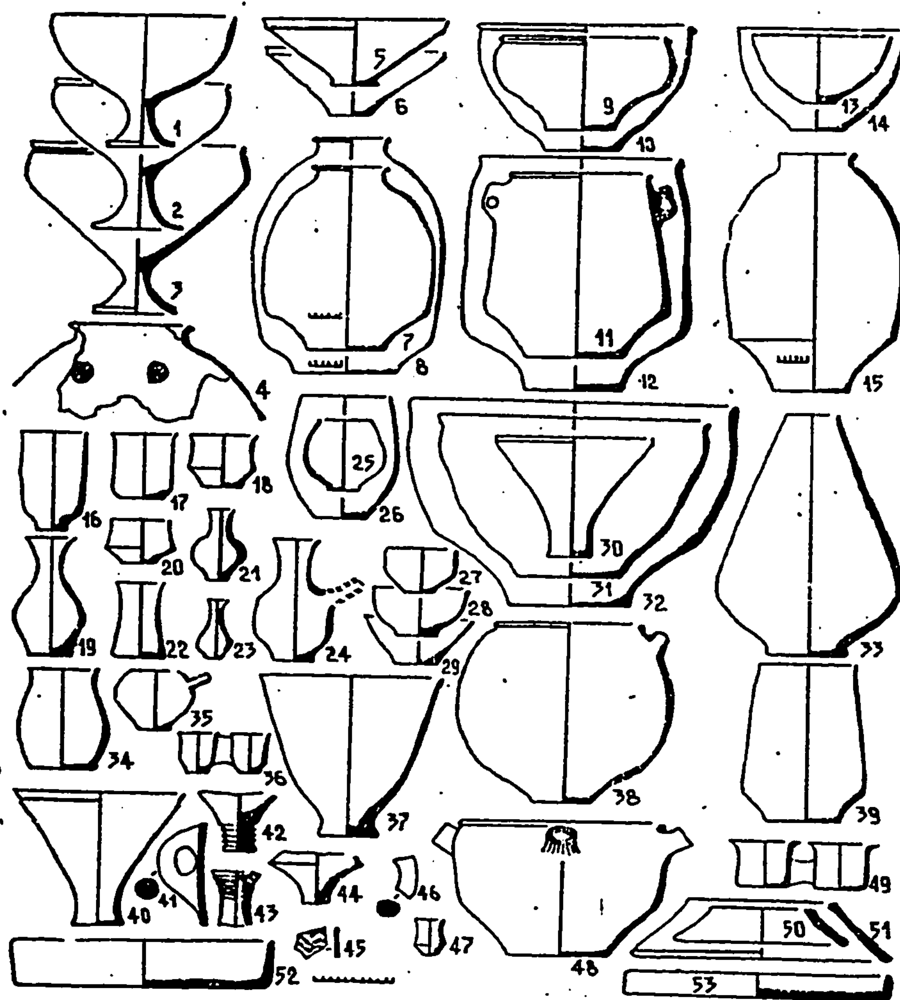


Figure 4.19 Kelleli 3 and 4 ceramics (Udemuradov 1986)

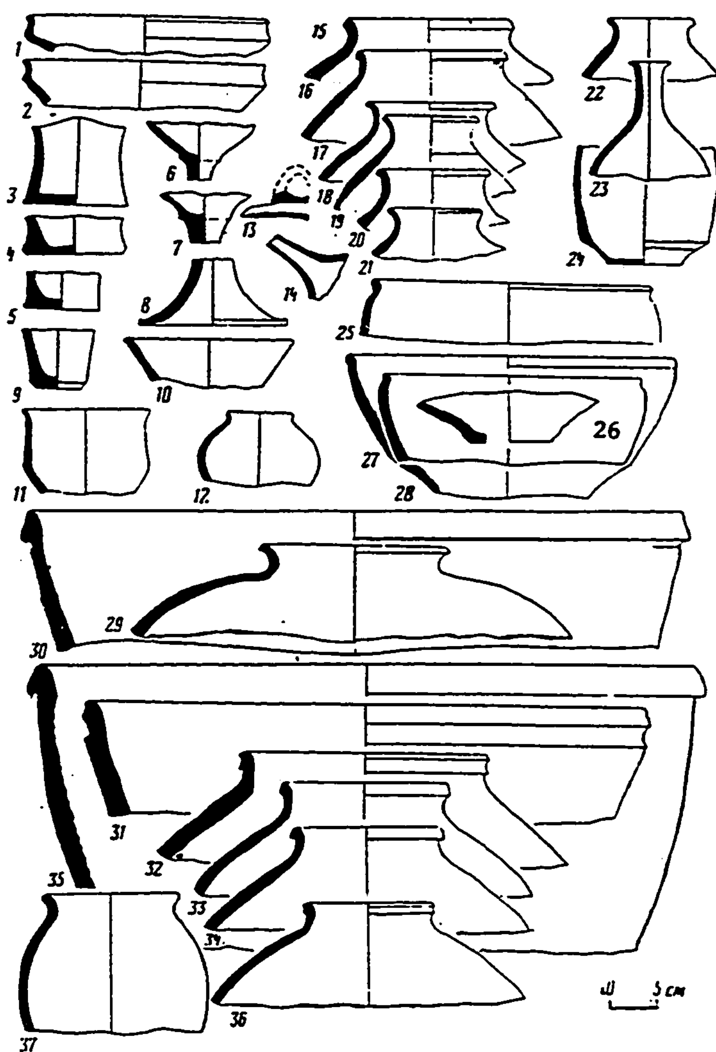


Figure 4.20 Togolok 21. Ceramics from central rooms.
(Piankova 1989)

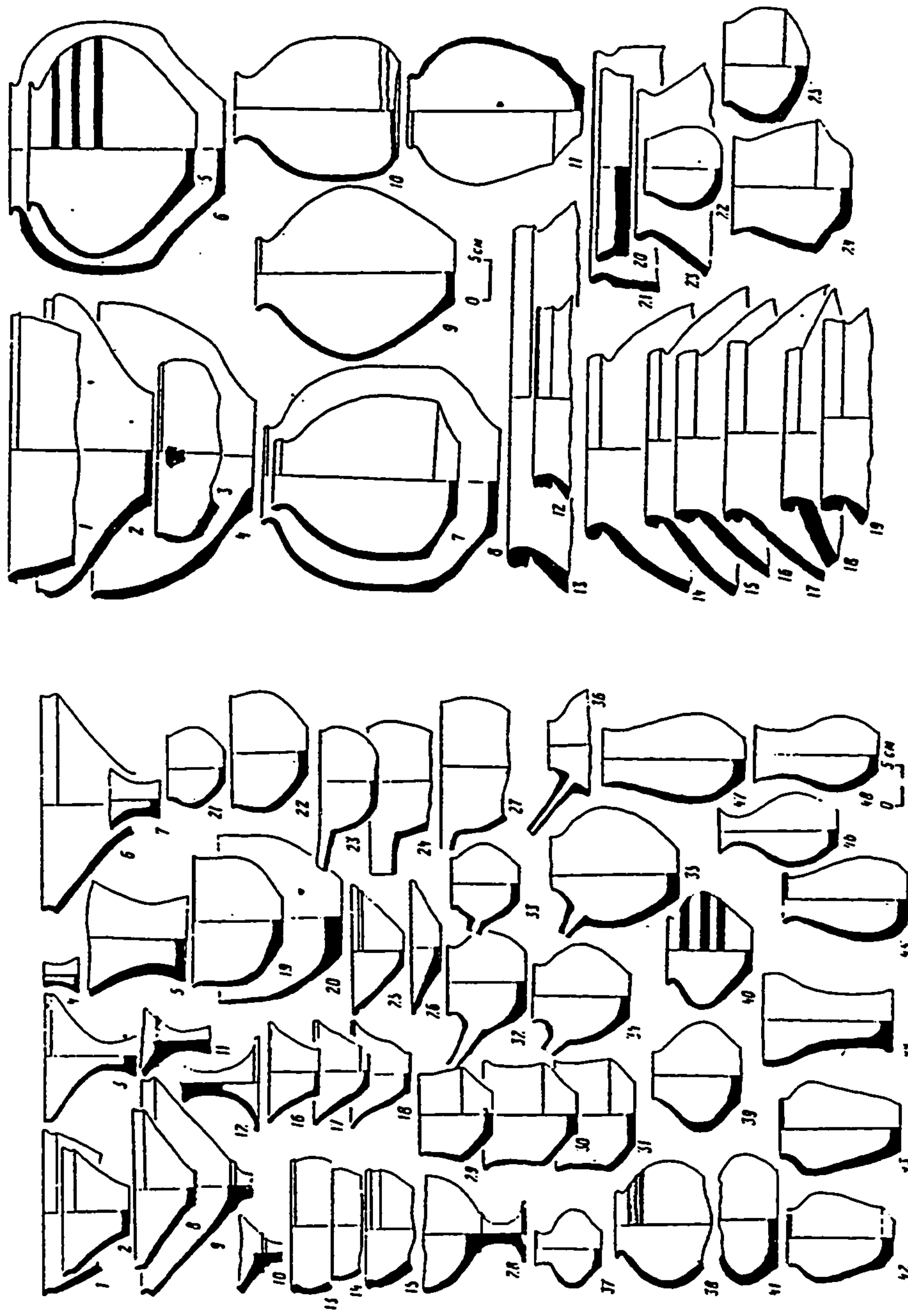
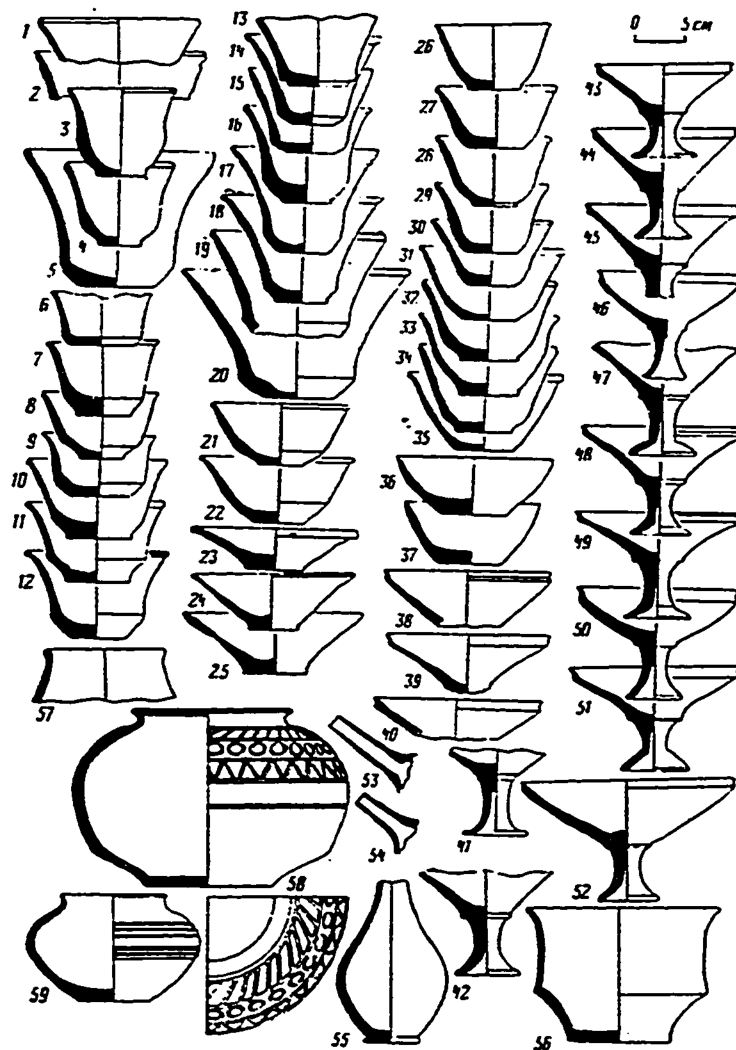


Figure 4.21 Togolok 21. Ceramics from exterior rooms. (Piankova 1989)



1-57—from a dig
58—from a burial
59—from a room

Figure 4.22 Togolok 1. Ceramics from rooms and burials (Piankova 1989).

MARGIANA CERAMICS: CLASSIFICATION

The ceramics are organized by a ranked series of characteristics including ware, size, rim profile and other features which permit me to classify to some level almost any potsherd from the excavations. In most cases it was possible to determine the 'whole pot' type on the basis of the rim and shoulder profile. However, in some cases (such as 'tea-pots') the whole pot types are based upon features which are not always determinable from potsherds. This system of classification correlates small potsherds with complete vessels. Thus a small area, such as a deposit formed at one single time, may provide enough typable sherds to allow for it to be classified by period.

Wheel-made ware is the largest category of ceramics and is the only type of ceramic which is sub-divided into size groups and types. Coarse wares and imported wares are discussed separately.

The ware of wheel-made ceramics

The wheel-made ceramics are made with a medium fine paste with fine, horizontally oriented chaff holes. Some well sorted fine quartz grains are visible under low magnification in a small percentage of Period 2 ceramics. No sherds of Period 1 or Period 2 ceramics could be assigned to period on the basis of the ware alone.

The range of colors is reddish buff to light red. In general, Period 2 ceramics are slightly redder than the

earlier ceramic group. Grayish or greenish misfired ceramics are found in the Period 1 and 2 domestic middens, indicating that some improperly fired ceramics were used despite their discoloration or deformations.

The decimal system

Each of the wheel-made ceramics types is given a decimal number (Figure 4.23) in which each type is given a 3 or 4 number or letter code designation separated by decimal points. The first number refers to vessel size and wall thickness. Following this is a letter, indicating general form (open or closed) of the vessel. The next number indicates the rim form within each size and form category. An additional decimal number is provided to distinguish distinctive designs, holes, spouts, pedestal, foot, etc., found on the types.

Size groups

Vessel size appears to be one of the most standardized features of the ceramic assemblage. The basic categories and decimal codes for the whole pot typology are:

1. Small vessels having rim diameters less than 15 cm and including miniature vessels, cups, small bowls and bottles;

2. Thin shouldered vessels having rim diameters between 15-45 cm;

3. Thick shouldered vessels having rim diameters from 15-45 cm;

4. Very thick shouldered vessels having rim diameters from 15-45 cm (see note 1 below);

5. Ceramic potstands, open on each end;

6. Large diameter platters and plates;

7. Ceramic cylinders.

Shape

Within the size classes the vessels are described by overall shape as open (A) or closed (B).

Rim

The next level of discrimination in my typology is the form of the rim. I do not have a separate rim typology crosscutting the size categories; number codes for the rim forms are described sequentially within each size and shape category.

Additional features

An additional level of classification is based upon variations of base or sides or upon features such as spouts. Ceramics are typed to this level when possible, but these characteristics tend to be rare, except in the large thick walled vessels (type 3.A.1).

1.

SHERD-BODY THICKNESS

.35-.65	cm	(thin)
.7-1.2	cm	(thick)
and above 1.3	cm	(very thick)

Gonur north deep sounding, Loci 11 and 14, N=80.

The basic level of discrimination in my typology is the form of the rim. The whole pot typologies classify on general form (including the foot and the base), rather than on one characteristic such as the rim. For instance, a chinik (teapot) is a specific form of small closed pot with a long spout (1.B.5.1).

The typology of the wheel-made ceramics is condensed in Figure 4.23, and individual types are discussed below.

SMALL (RIM DIA <15 CM)

	1.A.1	1.A.2	1.A.3	1.A.4	1.B.1	1.B.3	1.B.4	1.B.5	1.B.6
PERIOD 1			none	none		rare	none		none
PERIOD 2					1.B.2				

LARGE THIN VESSELS (RIM DIA 15-45 CM)

	2.A.1	2.A.2	2.A.3	2.A.4	2.B.1	2.B.2	2.B.3
PERIOD 1				rare			
PERIOD 2	none				none		none

LARGE THICK WALLED VESSELS (RIM DIA 15-45 CM)

	3.A.1	varients	
PERIOD 1		3.A.1.1	3.A.1.3
PERIOD 2		3.A.1.2	3.A.1.4

	3.B.1	3.B.2	3.B.3	3.B.4
PERIOD 1			rare	none
PERIOD 2				

VERY THICK WALLED VESSELS
(RIM DIA 15-45 CM)

	4A	4B	Podstavki 5	Platters 6	Cylinders 7
PERIOD 1					
PERIOD 2					

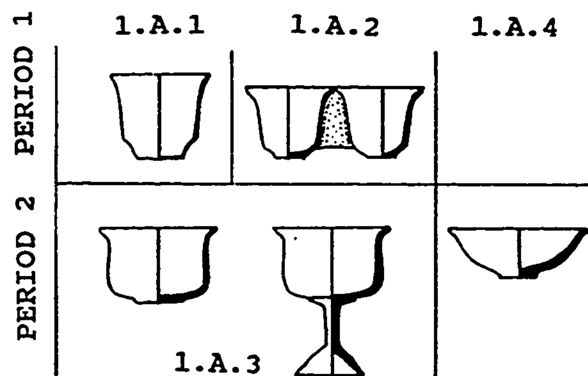
Figure 4.23 Ceramic typology presented in this study.

MARGIANA CERAMICS: DESCRIPTION

1. SMALL VESSELS

Cups, goblets and bowls can be differentiated by the slant of the wall profile. There is a wide variety of small vessels in Period 2, including distinctive spouted vessels and goblets, which do not occur in Period 1. In Period 2 the storage of small quantities of liquids, possibly perfumes or oils, seems to have been important, and it is possible that liquids were used in ritual.

SMALL OPEN VESSELS 1.A



1.A.1 Slightly open vessels (cups) (Piali). PERIOD 1

Cups (piali) have slightly open body profiles (90 to 100 degrees), slightly flaring rims and often a slight carination at the base or a flat string cut base. These are found in household contexts but rarely in burials.

This form is only found in Period 1, for example at Kelleli 4 and is similar to the forms from Altyn depe,

Levels 0-2. In Levels 1-4 of the Gonur deep sounding, the examples have quite standardized rim diameters, (Figure 4.1:4-9).

This form of drinking cup is replaced in Period 2 by a closed version of the drinking cup (1.B.4) and goblets (1.A.3).

1.A.2 Doubled vessels PERIOD 1&2

Double vessels are composed of two piali (cups) joined together before firing. The diagnostic bridges between the two vessels occur in both periods in Margiana and in Bactria. Some of the sherds of small open cups from the deep sounding may have been from double vessels but no double vessel connecting pieces were found.

Complete doubled vessels are found at Kelleli 4 and at Altyn depe Levels 0-2 (Udemuradov 1986 1988). These appear to be imitations of the stone counterparts which have a long tradition in Central Asia (Masson 1981). This form is also similar to alabaster double vases from the Indus Valley (Dales and Kenoyer 1986). Doubled vessels are found in Period 2 in Margiana and Bactria, both in ceramic and in stone (Sarianidi 1977).

1.A.3 Open small vessels = goblets (kubkami). PERIOD 2

Goblets are larger than piali (dia 12-15 cm) and wider, with a body profile slanting at 100-110 degrees. They have a

distinctive flaring rim and usually have a carination just above the base. The whole forms have both flat bases and hollow pedestal bases. Footed goblets often do not have a sharp body carination and are rounded in profile.

Flat based goblets and footed based goblets are found at Togolok 1 and Togolok 21, both in the burials and in contexts related to architecture. Similar rims are found in Layer 6 (Period 2) of the Gonur sounding (Figure 4.13:1-3), although it is not known what kind of base they had. Footed goblets are very common in burials and cenotaphs from Bactria and Margiana and from BMAC assemblages outside of Central Asia such as from Khurab, Shahdad (Hiebert and Lamberg-Karlovsky 1992), Sibri, Quetta, and Mehrgarh (Jarrige 1989, Santoni 1984).

1.A.4. Small plain plates. PERIOD 2

The profiles of plates have angles ranging from 135 to 170 degrees. The rims vary from rounded (like cups and goblets) to sharp triangular shaped. The base is usually flat and sometimes is string cut. Cups and bowls are commonly found together in Period 2 burials and in architecture. Several examples of this form with signs inscribed inside were found in the cenotaph at Gonur south (Burial 41). They are commonly found in the eastern rooms of Togolok-21 (Piankova 1989).

1.B.1 Miniature jars PERIODS 1&2

Miniature jars are found both in Period 1 and Period 2 sites. The various forms are similar to larger counterparts, such as storage jars. The miniature vessels from Kelleli 4 (Masimov 1981) are similar to miniature vessels from late Namazga V at Altyn depe (Levels 0-2) (Udemuradov 1987).

In Margiana Period 2 and Bactria, miniature ceramics are found together with miniature bronze tools, weapons, carts and miniature "miniature columns". These have been recovered from burials where they were apparently placed instead of the full scale items. They are found in burials at Togolok 21, and similar finds in burial contexts can be paralleled at Djarkutan and Dashli. A miniature vessel, made of gray mica-tempered ware was found in layer 6 of the Gonur deep sounding. The ware is typical of Djarkutan, and this vessel is most likely an import from northern Bactria.

SMALL CLOSED VESSELS 1.B

	1.B.1	1.B.3	1.B.4	1.B.5	1.B.6
PERIOD 1		rare	none		none
PERIOD 2	1.B.2				

1.B.2 Cylindrical Vials PERIOD 2

Ceramic vials have similar forms to stone and bronze vials, and probably are imitations of them. There are both

wheel-made and handmade versions; the handmade vessels sometimes have incised designs. Gonur south and Togolok 21 have small cylindrical vials in architectural and burial contexts (Figure 4.24). A cylindrical vial found at Togolok 21 appears to be an import from Bactria, to judge from its gray ware with mica temper typically found at Djarkutan.

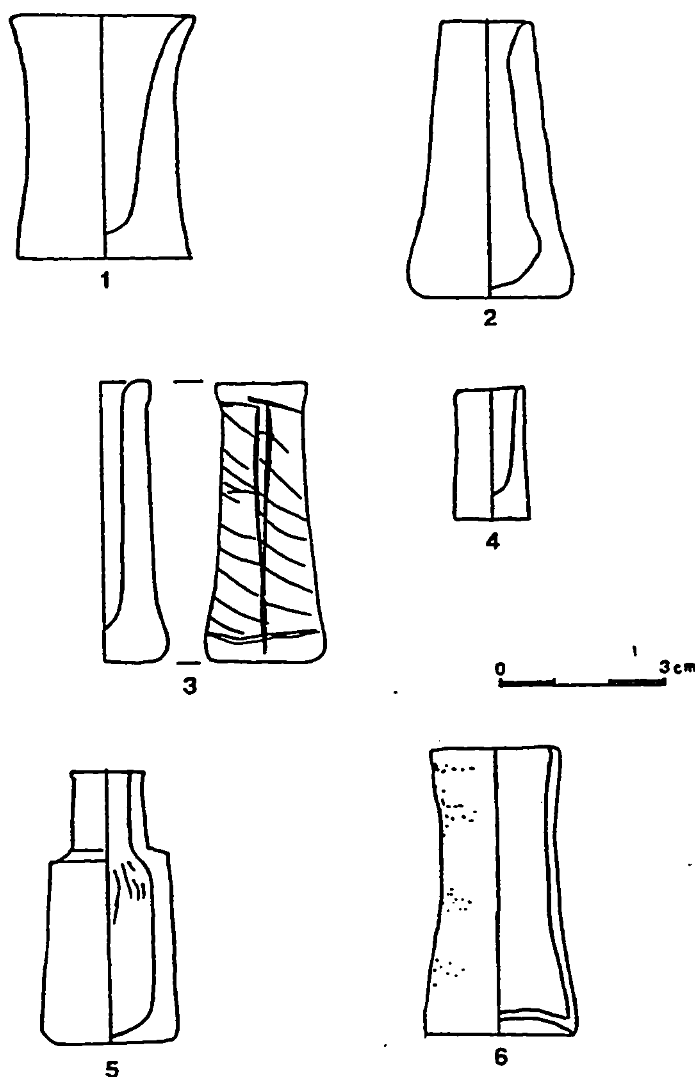
1.B.3 Tall necked bottles: Butilki (A) PERIOD 1&2

These vessels have bulbous bases, a long neck (total height 18-20 cm) and rims of about 4-8 cm and often have a long thin spout. This form is found in food preparation areas together with medium sized vessels and grinding stones such as in Room 84 of Gonur south (described in Chapter 7).

This form is a minor element of the Namazga V foothill ceramics and is rare on Period 1 sites. It is found very frequently in the building complexes of Period 2 at Gonur south and Togolok-21 and is a characteristic form at Dashli, Djarkutan, and Sapalli.

1.B.4. Bottles with bulbous shoulders: Butilki (B) PERIOD 2

Bottles with bulbous shoulders have wide mouths, curved vertical lip rims, and a small, string cut base. This form is found together with the tall necked bottles ('A') at Period 2 sites in Margiana (Gonur, Togolok 21, Togolok 1) and from burials at Togolok 21 and from Bactria (Djarkutan and at Sapalli depe).



Period 2 cylindrical vials.

1. Wheelmade buff, medium fine, chaff, string cut base Togolok 21 (local Margiana ware)
2. Wheelmade burnished grey, medium fine, mica temper Togolok 21 (import from northern Bactria)
3. Wheelmade burnished grey exterior, Togolok 21, southwest room context (import from n. Bactria)
4. Cylindrical vial, yellow and white mottled alabaster, Togolok 21, burial 30.
5. Cylindrical vial, lead, Togolok 21, room 160.

Figure 4.24: Period 2 cylindrical vials.

There are no analogous forms of bottles in Period 1. The bottle forms 1.B.3 and 1.B.4 appear to be innovations in Bactria and Margiana during the BMAC.

1.B.5. Small closed vessels (banki and stakani) PERIODS 1&2

Small slightly closed plain-rim cups are either tall (banki) or short (stakani). These cups in medium fine ware are found together with the exact same form in coarseware, in Room 40 of Togolok 21. They were darkened from cooking of some kind, perhaps heating small quantities of liquids. This form is found in both periods in Margiana and in low percentages (1-2%) from the Gonur deep sounding. This form is common in the foothill zone periods of Namazga IV and Namazga V, in Bactria, and both periods of Margiana.

1.B.6 Small globular pots PERIOD 2

Small globular pots have outturned rims and flat string cut bases. Small globular pots are a rare type at Altyn depe in the upper levels (with long spouts) and are not found in Period 1 in Margiana. They are common in Period 2, found together with bottles and cups from Gonur, Togolok 21 and Togolok 1 (Piankova 1989) (Figure 4.20).

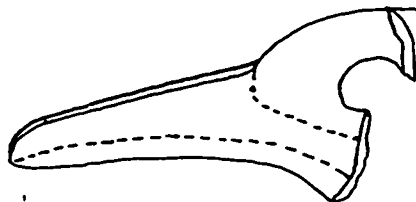
There are three important variations of these pots:

Several examples of these pots from Period 2 have concentric red bands painted on the upper shoulder. A small number of painted sherds are found in Margiana, and are

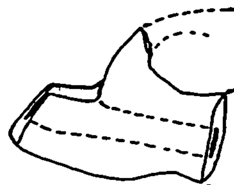
usually classified as Indus valley related (B.Lyonnet pers. comm.); however, on the basis of the ware, they appear to have been locally made and post-date the "mature" Harappan band-painted ceramics.

Quite frequently the small globular pots have long thin spouts (Togolok-21 Figure 4.20:14, Figure 4.21:32-36), similar to the spouts on bottles (1.B.3). These spouted globular pots are generally found with bottles and medium size vessels in a domestic contexts, or in burials and cenotaphs.

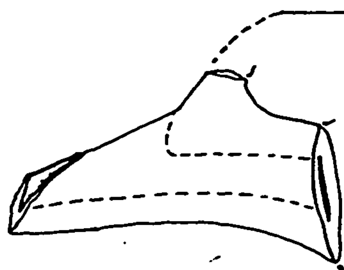
Of particular importance, but less common, are bridge spouts (Figures 25, 26) from Margiana Period 2 and Bactria. The spouts are generally similar to the bridge spouts found on grey ware of the Early Iron Age in northern and eastern Iran (Young 1965, Dyson 1973).



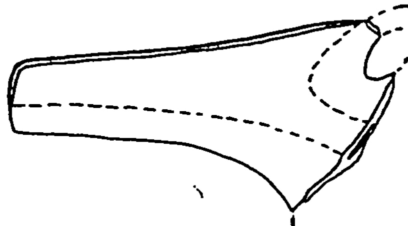
Togolok 21, room context
Buff, medium fine chaff
and sand temper,
exterior of spout is
shaved.



Togolok 21
Handmade red ware,
sand and grog temper



Togolok 1, surface
Buff, medium fine chaff
and sand temper.



Togolok 1
Buff, medium fine chaff
and sand temper.

Figure 4.25: Period 2 bridge spouts from Margiana.

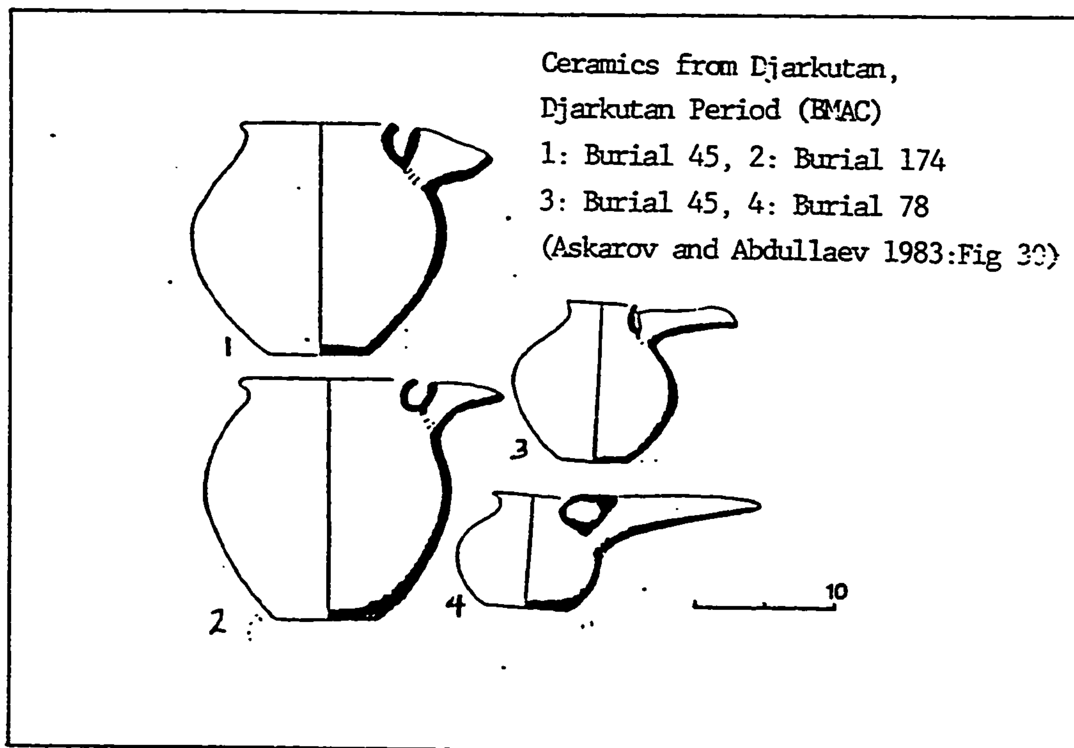


Figure 4.26: Period 2 bridge spouts from N. Bactria.

2.A LARGE THIN WALLED OPEN VESSELS

	2.A.1	2.A.2	2.A.3	2.A.4
PERIOD 1				rare
PERIOD 2	none			

Thin walled ('serving' or '<u>stolovaya</u>') vessels are often presented as good indicators of chronology in Margiana (Masson 1981, Masimov 1981a, Udemuradov 1987, Piankova 1989). However, the presence or absence of the two most common types does not differentiate between Periods 1 and 2 in Margiana. Vessels with a vertical lip rim (2.A.2), typical of Period 1 are also found in Period 2; and vessels with a sharply grooved rim (2.A. 3) which are usually described as an index for Period 2 are found in both periods as well.

The thin walled vessels account for one third of the assemblage in both Period 1 and Period 2. The trough spouts of the large bowls (2.A.4 and 2.B.2) are chronologically specific (Period 2) but are not common. Other rare forms include corrugated pedestal bases which are a key diagnostic

of the foothill zone in late Namazga V (Masimov 1981) and pedestal bases with a single ridge just beneath the vessel- a form typical of Bactria, and found in Margiana Period 2 sites.

2.A.1 Open forms with simple rims. PERIOD 1

There are two size classes of these vessels (~16 cm diameter and 20-25 cm diameter), which may relate to a functional difference between them (Figure 4.1:10,11; Figure 4.2:1-9) .

It is possible to determine the overall form from the rim sherds on the basis of the body profile. The vessels with a sharp carination below the rim at the shoulder had a hollow pedestal base (Figure 4.2:2-7). This type is distinctive of late Namazga V at Altyn depe and of Period 1 in Margiana. At Gonur they were found in both the deep sounding of Gonur layers 1-4 (10%) and in the domestic architecture (8%). In Margiana this type acts as an index form for Period 1, and shows the connections between the foothill zone and Margiana at this time.

Those with a rounded shoulder have a flat base (Figure 2:8-9), and the smaller forms can have either hollow pedestal bases or small solid pedestals (Figure 1:10,11, Figure 2:9).

2.A.2 Open form with a vertical lip. PERIOD 1&2

The rims of these vessels form a sharp angle at the shoulder and the vertical rim is smoothly indented. Their rim diameter varies very little, and this suggests some uniform feature of their production or function. This type is one of the most standardized of the ceramic forms in the Margiana assemblage (Figure 3; Figure 14:3-10). It is found with both trumpet shaped bases (the whole pot type is called a 'vase'-- type 2.A.2.1) and hollow pedestal bases (the whole pot type referred to as 'footed vase'--type 2.A.2.2); the difference can be determined by the shape of the body profile. From the Period 1 domestic architecture at Gonur a few pieces have trumpet bases (2% of assemblage), and several were made with hollow pedestal bases (8% of assemblage). This rim form is found in Periods 1 and 2 in equal percentages from the Gonur deep sounding, although more often on trumpet shaped bases than on pedestal bases. This rim form is found in the foothill zone during Namazga V, and the earliest example of this rim form (on a pedestal base) is from Ulug depe Level 5 (exc 3) which is late Namazga IV, and the first level with wheel-made ceramics.

2.A.3 Open form with a sharply grooved rim. PERIOD 1&2

These rims are differentiated from the body by a sharp indentation or groove, and the rim angles out slightly above the groove. This type is also called "clipped rim" (Kohl

1984). The distinctive incised line just below the lip varies in depth. This rim is found on ceramics with trumpet shaped bases and pedestal bases. The distinctive shoulder profiles associated with these two "whole forms" on the vertical lipped rims are not found here. This type is not as standardized as the vertical lipped rim type, having two general size categories: ~20 cm, and ~25 cm (Figure 4.4; Figure 4.13:10-13). The vessels with the sharply grooved rims appear to be deeper than the vertical lip vessels.

Sharply grooved rims are common in the first period at Gonur (16.5% of the total assemblage from the stratigraphic sounding). This rim shape is typical on all Period 1 sites in Margiana, as well as in the upper Levels (0-2) of Altyn depe. In Period 2 of the Gonur deep sounding, this form and rim type is less common (5% of the assemblage). It is also found on other Period 2 sites in Margiana, although it is not known from northern or southern Bactria where the 'vases' have predominately carinated incurving rims. Yet, metal vessels have been found with this rim shape from Bactria, in imitation of ceramic vessels.

2.A.4. Open bowls PERIODS 1&2

Large diameter (15-35 cm) thin bodied bowls with flat bases often have distinctive triangular rims in profile. This rim form is found in both Period 1 and Period 2 from the Gonur deep sounding (Figure 4.13:6-9; Figure 4.5:8-10),

but is rare in other Period 1 sites of Margiana and is not found in the foothill zone. This form is typically found in Period 2 sites of Margiana and in Bactria, often with trough spouts. Bronze bowls with the same form and trough spout are also found in graves from southern Bactria. Because this form occurs earlier in ceramics than in the metals, I suggest that the bronze vessels are imitating the forms and types of the ceramics.

2.B LARGE THIN WALLED CLOSED POTS

	2.B.1	2.B.2	2.B.3
PERIOD 1			
PERIOD 2	none		none

2.B.1 Slightly closed forms with a faint rim line PERIOD 1

This type has a faint finger line or indent from .75 to 1 cm below the rim. The angle of this lip is sometimes slightly more upright than the angle of the wall profile. The widest part of the vessel when whole is approximately 1/4 of the way up from the base. Often referred to as "biconical jars" these vessels appear to have been either

thin versions of small storage pots (3.B.1 and 3.B.4), or large versions of the drinking cups (1.A.1 and 1.B.5). This form is typical of the late NMG 5 ceramics from Altyn depe and common in Margiana Period 1 (9% of the Gonur north domestic architecture assemblage). In the Kopet dag foothill sites of Altyn, and Ulug depe (among others), the widest part of the ceramic is evenly biconical in the early and middle Namazga 5 period (Masson 1981). In the late NMG 5 period the widest part of the vessel is located in the lower quarter of the vessel (Udemuradov 1987). Thus the form provides an indication of the relative chronological position of Margiana Period 1 in the Namazga sequence.

The deep sounding at Gonur yielded individual rim sherds from vessels varying in size from quite large to small (10-35 cm dia) with body profiles ranging from sharply carinated (Figure 4.1:1-2) to rounded or 'egg-shaped' (Figure 4.1:3).

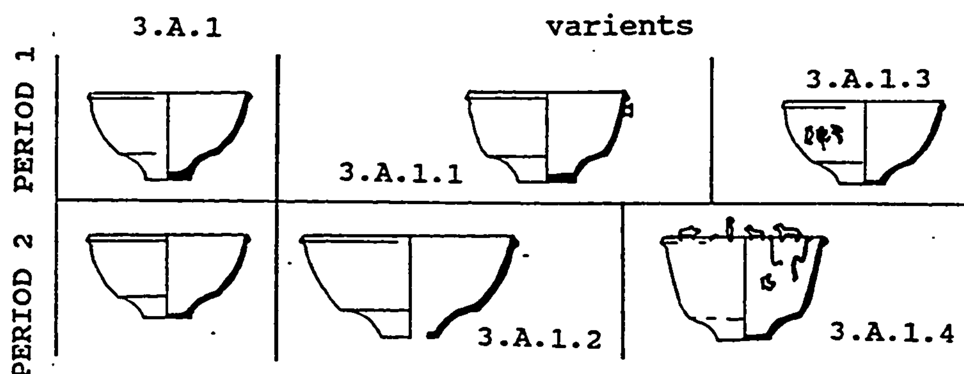
2.B.2 Slightly closed large bowls. PERIOD 1&2

Slightly closed bowls with flat bases and triangular rim are found in Period 1 sites of Margiana (Gonur sounding 1%; Figure 4.6:8) but become more common in Period 2 context in a similar pattern of abundance to the open versions of the large bowls. (Figure 4.14:1, Figure 4.15:7-9). They also are found in Margiana Period 2 sites with trough spouts.

2.B.3 Hole mouth pots PERIOD 1

Another strong parallel between late Namazga V in the foothills and Margiana Period 1 is provided by the globular pot with distinctive vertical pierced lugs on two sides of the vessels. These lugs are found on hole-mouth thin walled vessels likely to have served as storage jars for they would have been too thin to have been transported. Fragments of these lugged pots are found at Kelleli (Masimov 1979) and at Gonur on the surface (Piankova 1989).

3. LARGE VESSELS WITH THICK SHOULDERS



"Serving" (stolovaya) and "common" (bitovaya) vessels can be quantified by measuring the thickness of the body profile below the rim. The "common" vessels have shoulder thicknesses greater than 0.7 cm. There is no difference in the amount or type of temper, or in the technique of manufacture between the thin and the thick ceramics. The closed forms (3.B) are primarily storage vessels, in some cases found buried in walls and beneath floors with just the

mouth exposed. The open forms (3.A) are less likely to be intended for storage, and are sometimes decorated on the outside or on the rim. The decorated vessels are found in cenotaphs, burials and non-domestic contexts.

Most of these vessels have a two part method of manufacture. The base is first fashioned on a chuck or a form and the upper part is then added on the wheel. The impressions of the chuck are often visible as mold marks and sand impressions (Figure 4.27). When experimentally reproduced, the walls are added using a slab/coil technique and the vessel form is finished on the wheel (R.Meadow, pers comm). This technology of two part ceramics is typical of both Central Asia and the greater Indus Valley (Dales and Kenoyer 1986). In Central Asia, this technology is first found in early Namazga V and the shape or size of the bases do not differ significantly from one period to the next (personal observations, Ulug depe ceramics).

This size category constitutes over half of all of the rim sherds (Period 1: 45%; Period 2: 54%). The open and closed forms of this size category (3.A.1, 3.B.3, and 3.B.4) are practically indistinguishable from one period to the next.

3.A.1 <u>Large slightly open bowls and basins</u>

These vessels group into two size categories visible in the rim diameters. These are large ~24-30 cm (basins or

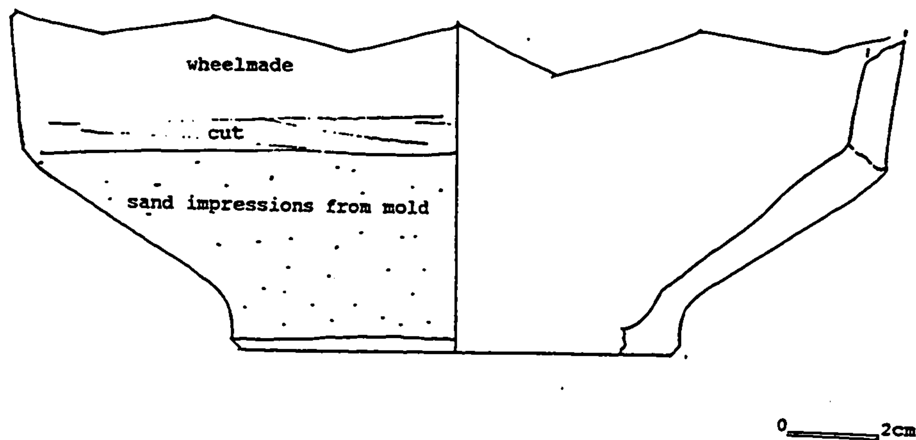


Figure 4.27: Cross-section of a mold-made base.
Period 1: Gonur north (Locus 43).

"miski") (Figure 4.5:5-7) and very large ~35-45 cm ("tagori") (Figure 4.5:1-4). The rims are rounded to triangular shaped, with no pronounced neck. These large bowls are found grouped together on the floors of the buildings often along with grinding stones. These areas are likely to have been food or drink preparation areas or specialized production areas. The frequencies of these vessels are: Gonur Period 1, domestic architecture: 6%; Gonur deep sounding: Period 1: 6% (Figure 4.5:1-7), and Period 2: 9% (Figure 4.15:1-6; Figure 4.16:8).

The basic form of the vessels remains the same over time in Margiana but there appears to be significant chronological and functional variation in some of their decoration.

3.A.1.1 Spouts- PERIODS 1&2

The slightly open vessels sometimes have spouts, including examples with multiple spouts. Oval spouts have been found in Period 1, and open spouts in Period 2, while short round spouts are found in both periods in Margiana. For example, at Gonur, a complete spouted vessel was found in a Period 2 cenotaph.

3.A.1.2 Large straining bowls- PERIOD 2

Large bowls and basins with a hole in the bottom (sidilka) appear to be large sieves or strainers. This is a specialized production vessel found (so far) to begin in Period 2 in Margiana as well as continuing into the Iron Age

(Yaz I) sites.

There are Namazga VI parallel forms from the upper levels at Namazga depe and from Level 2 at El'ken depe (Khlopina 1972). These vessels were probably used in conjunction with the pot stand forms (Khlopina 1981).

3.A.1.3 Incised and applied decoration PERIOD 1

Incised and applied decorated vessels are found only in Period 1 sites in Margiana. The decoration consists of incised trees with applied clay animal forms on either side of the tree. The decoration is found on the outside of the bowl, and is not visible from above (Figure 4.28). The designs are reminiscent of the tree and ibex motifs found on the late Bronze Age/ Early Iron Age ceramics of Syro-Palestine (Amiran 1969, pl.50). It is hard to imagine a connection, however, unless of course, we are to derive the Israelites from Central Asia, as P. Lapp has suggested (Lapp 1966).

3.A.1.4 Terracotta friezes- PERIOD 2

In Period 2, incised and applied decoration on these ceramics is not found, but a frieze of terracotta figurines is applied to the rim and to the inside of large bowls and basins (Figure 4.29). In well preserved examples, (e.g., a complete example from the surface of Togolok 1: Sarianidi 1980), the series of animals and humans on the vessel rims has a particular order, implying a narrative. Although very few whole vessels have been found, the figurines broken off

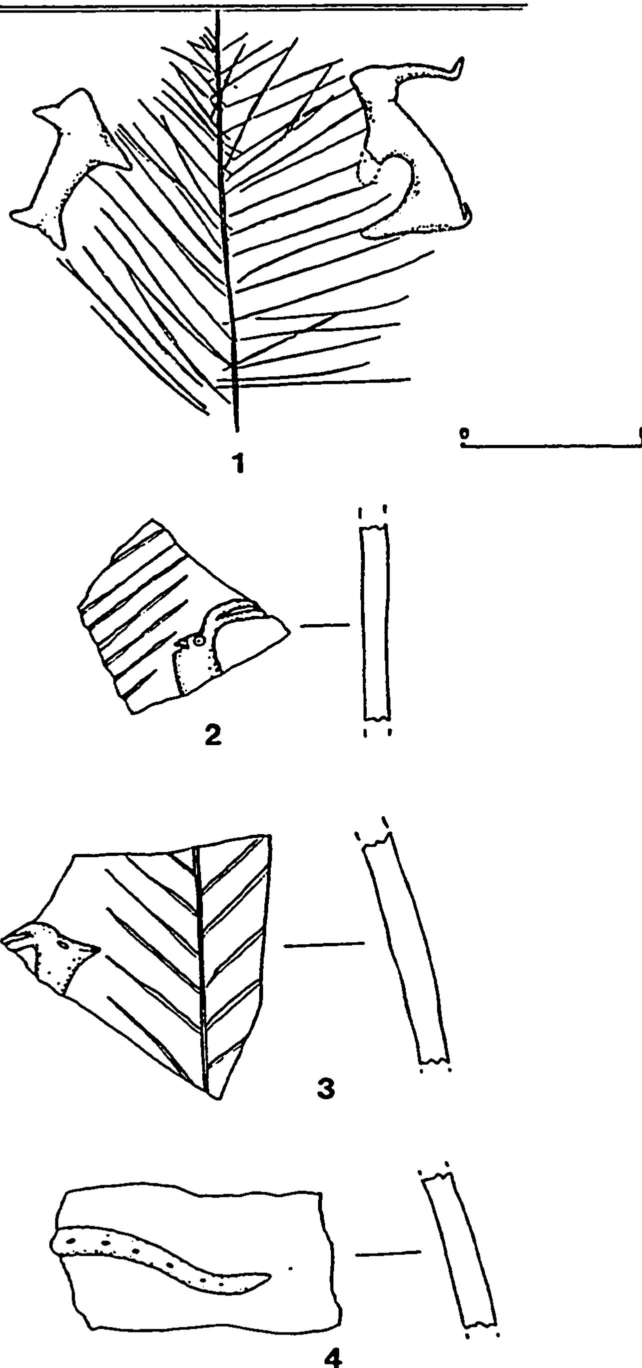


Figure 4.28: Period 1 incised trees and applied animal decoration.

1. Gonur north, domestic architecture (Locus 39).
2. Egri-Bogaz (Masimov 1981)
3. Kelleli oases (Masimov 1981)
4. Kelleli oases (Masimov 1981)

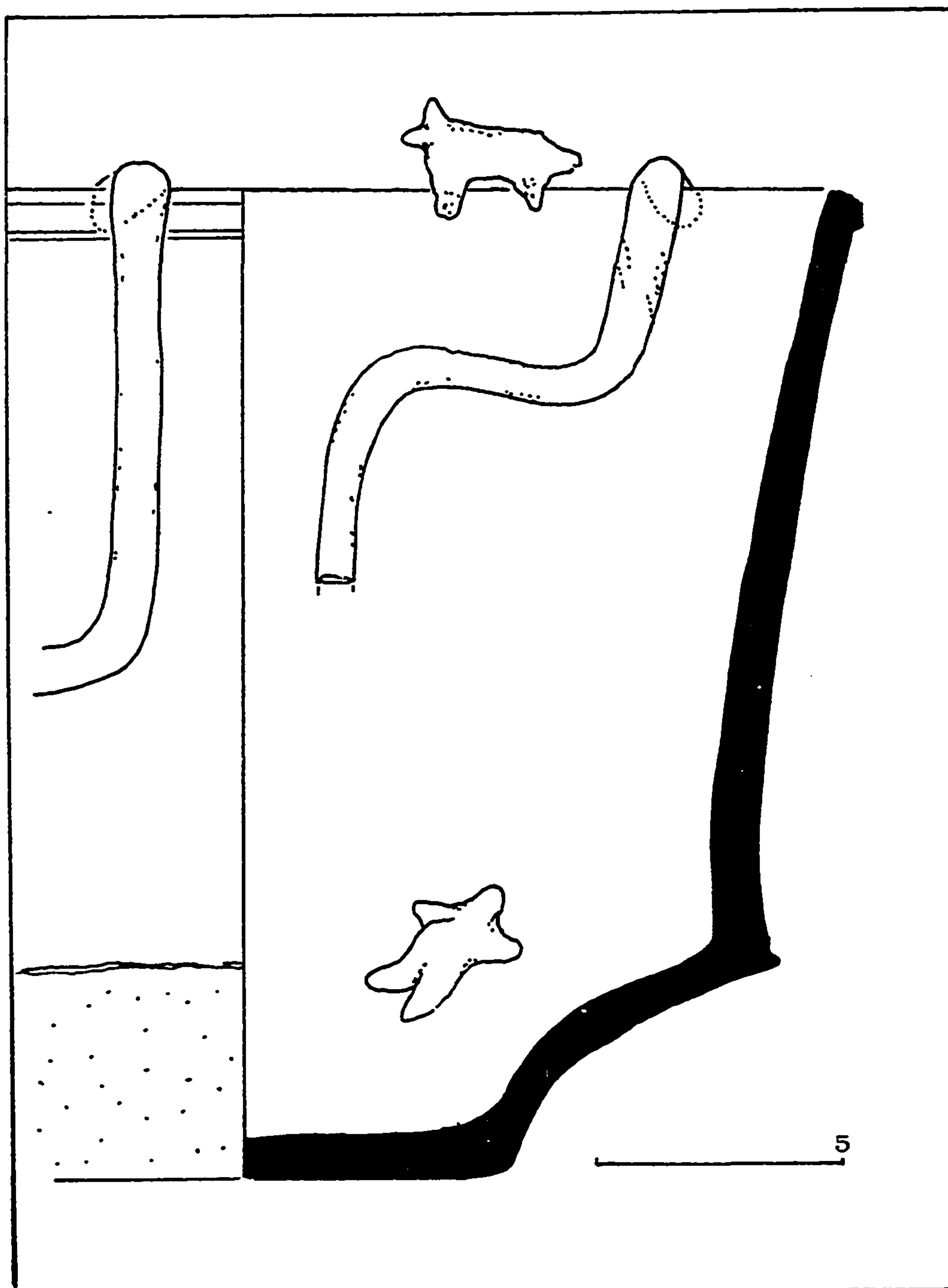


Figure 4.29: Period 2 terracotta frieze. Type 3.A.1.4
Togolok 1, burial 20, found with two bronze figurative axes.
Buff, med fine chaff. Dia 26 cm.

of such vessels are found on all Period 2 sites in Margiana, suggesting that these bowls were more common on the Period 2 sites than might be suspected based upon what has been recovered from middens or the domestic debris.

That the ceramic form remains the same in both Period 1 and Period 2 decorated bowls argues for continuity. That the type of decoration clearly changes from Period 1 to Period 2, is an indication of a fundamental change in society with the beginning of Period 2, (the BMAC).

3.B STORAGE VESSELS

	3.B.1	3.B.2	3.B.3	3.B.4
PERIOD 1			rare	none
PERIOD 2				

3.B.1 Large slightly closed vessels PERIOD 1&2

This type is a short closed pot with a wide diameter rim. It can be differentiated from the other storage pots by the practically vertical shoulder and outturned rim. The shape of the rim is quite standardized and does not change from Period 1 to Period 2. This form is the single most common ceramic type found in the domestic architecture from

the north mound at Gonur (22%). In the Gonur deep sounding, this form is common in Period 1 (15%) (Figure 4.6:1-7; Figure 4.7:1-9) as well as in Period 2 (24%) (Figure 4.16:1-8; Figure 4.17:1-5). In Period 1, these vessels are found with wide oval spouts directly below the rim in a fashion similar to that of the large basins.

3.B.2 Short necked storage pots PERIOD 1&2

Short necked storage jars (khomchi) have small diameter mouths with rounded and triangular rims. This type is common in the Bronze age pottery of Margiana and shows little change through time. Rim diameter varies from 11-15 cm, 18-25 cm, and 28+ cm. The whole forms have various volumes, and even miniature versions exist (1.B.2.2).

In Period 1 these vessels are always made in the two part technique with molded bases, while in Period 2 are two part construction and entirely wheelmade variants.

Some Period 2 vessels have simple geometric incised designs and painted bands. The undecorated forms are common during Period 1 in the Gonur sounding (9%) (Figure 4.8:1-11) and in Period 2 (15%), (Figure 4.18:4-8,12-17).

These pots are imitated in the coarse handmade pottery, even including a hand-formed convex base in the shape of a molded base.

3.B.3 Tall necked globular pots PERIOD 1&2

Tall necked *khomchi* have sharply triangular to band-shaped rims on a 2-4 cm vertical collar. The overall shape is similar to the short necked pots above (3.B.2), including the wide globular bodies and molded concave bases. The type is not an index form of Period 2 but is characteristic of it. In the deep sounding at Gonur, the number of tall necked *khomchi* are relatively few in Period 1 compared to Period 2, where they are a distinctive form (Figure 4.8:12-13; Figure 4.18:1-3).

3.B.4 Short wide mouthed khomchi PERIOD 2

These *khomchi* are squat conical pots with thick body profiles and simple rims. The squat plain rim, wide mouth *khomchi* are characteristic of Period 2 have the same mold made bases as the larger *khomchi* (3.B.2 and 3). In the Gonur deep sounding the form is not very common, nor is it very diagnostic (Figure 4.18:9-10).

VERY LARGE VESSELS (Khoms) Podstavki Platters Cylinders
4A 4B 5 6 7
PERIOD 1
PERIOD 2

4 A&B VERY LARGE STORAGE AND PRODUCTION VESSELS PERIOD 1&2

Large storage jars (khomi) are thick (1.3 cm+) walled large wheel-made jars. The mold-made bases are made from the same size mold as the khomchi (3.A and 3.B). Unlike the khomchi, these have shoulders wider than the bases and are generally over 70 cm tall. The paste of the very heavy pots is medium in texture with fine chaff inclusions, and only slightly coarser than the medium fine ware typical of the smaller forms.

Rim diameters of the open vessels (4.A) are generally quite large (35 cm+), no change from Period 1 to 2. Rim sherds of this category in the Gonur deep sounding constitute 2% (Period 1) and 4% (Period 2) of the ceramics (Figure 4.10:6,7).

Closed _khomi_ (4.B) are found that were more than one meter tall. While few of the vessels of this size are preserved whole, several examples have been found on the floors of spalled into thousands of fragments. Comparing the small storage jars (_khomchi_) and the large storage jars (_khomi_) on the basis of the sherds from the Gonur deep sounding (such as from Loci 11 and 14), there is a clear division in distribution of sherd thicknesses, suggesting that there are only these two sizes and not a continuum of storage jar sizes in these deposits at Gonur. In the Gonur deep sounding, these pots make up 7% of the sherds in Period 1 (Figure 4.10:1-5, Figure 4.11:1-3) and 4% of the sample in Period 2 (Figure 4.17:6-10).

5. 'POTSTANDS'- _PODSTAVKI_ PERIOD 1&2

These are truncated cone shaped ceramics which are open at both ends. The small opening varies in diameter from 20 to 40 cm and the large opening from 30 to 60 cm. Often they have folded "rims" at both ends, and the tops of the rims are horizontal. _Podstavki_ often are found with potter's marks on them, both on the interior and the exterior, that were engraved prior to firing.

Podstavki are found on all of the Bronze age Central Asian sites, in the foothill zone of southern Turkmenistan from early Namazga V onwards, and in Margiana and Bactria. They are not restricted to the Namazga VI period in any of

these areas.

The Russian name "podstavki" potstand is used, despite the unclear function of these ceramics. They appear to be used as pot supports for the typical concave molded form of base; some podstavki have holes for supports (strings?). However, no khom has yet been found in situ sitting in a potstand. In the architecture at the south mound at Gonur as well as at Togolok-21, special circular hollows have been found in floors in which storage vessels (khomchi) and large storage vessels (khomi) were found.

The principle function of the podstavki may have been as chucks for the production of the bases of the large molded base ceramics. The use of these ceramics as chucks is proved by the identification of potters marks molded on the base of several khomi which can be matched with the potters marks found on the inside of the podstavki (Figure 4.30).

6. PLATTERS PERIOD 1&2

Very large diameter (+35 cm) flat plates with shallow (6 to 10 cm high) sides are found in both Periods 1 and 2 (Figure 4.14:11). Join marks are visible in section where base and wall come together, showing that it was constructed from two or more pieces and finished on the wheel. The paste is the same as in wheel-made ceramics.

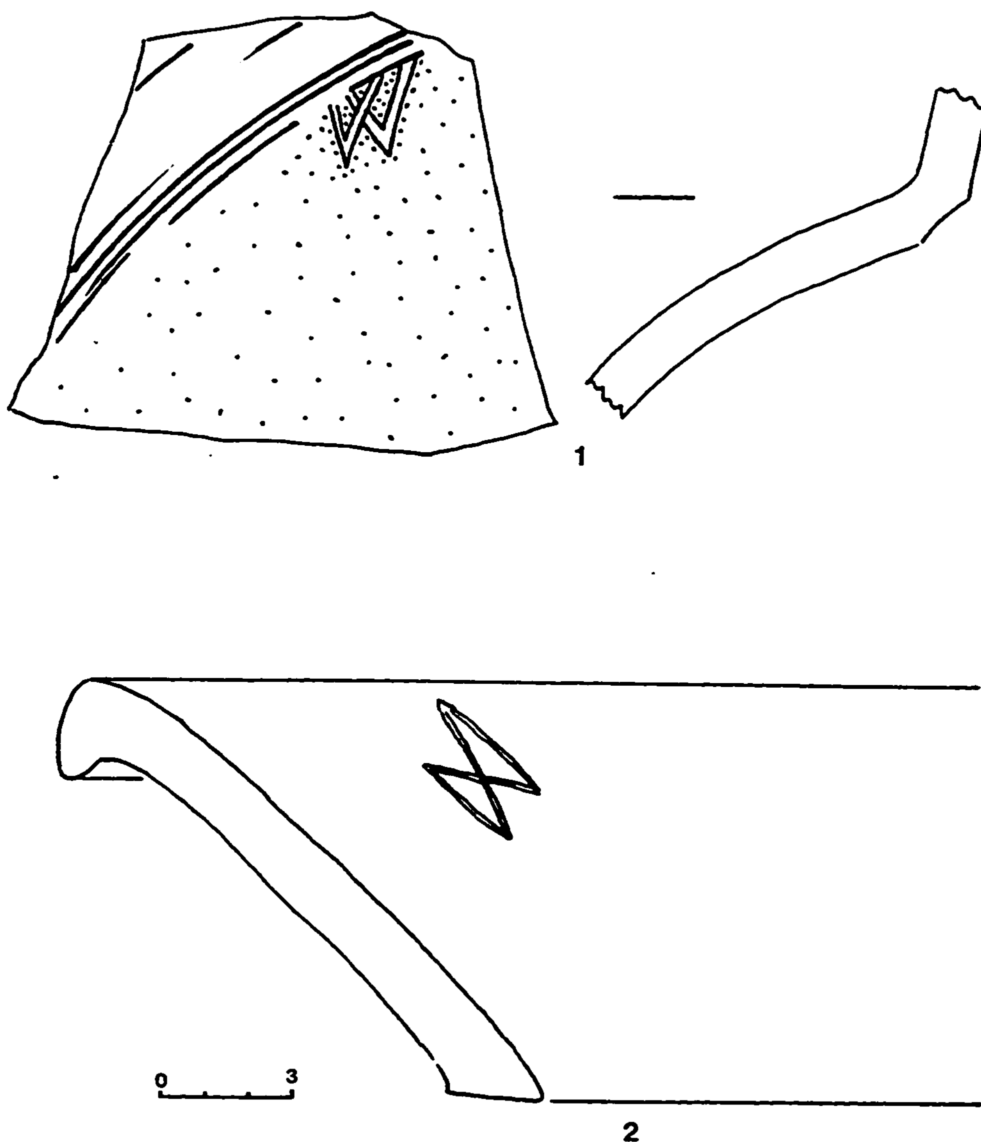


Figure 4.30: Potters marks form podstavki's.

1) Raised imprint of a "bow-tie" motif on the moldmade base of a type 3 vessel, Gonur, surface.

2) "Bow-tie" motif incised inside of a podstavki, Gonur south, surface.

7. CYLINDRICAL CERAMICS

Strainers PERIOD 1

Wheel turned cylinders with perforations, similar to those from the Indus Valley, are found on the Bronze Age sites of Margiana, including those in Period 1. The vessels are cylindrical and have unevenly spaced holes punched from the outside prior to firing. One example from the Kelleli 3 excavations is a perforated cylinder which is perforated all the way to the rim of the vessel. The vessels are of the same ware as the wheel-made ceramics.

"Drainage pipes" PERIOD 2

Drain pipes are found in Period 2 at Togolok 1 and Togolok 21. At excavations from Togolok 1, a water drainage system with fragments of fired ceramic pipe was found. The pipes are tapered so one pipe will fit into another. Although drainage ditches are found in Margiana in all periods, only in Period 2 are ceramic pipes found.

PAINTED DECORATIONS, INCISIONS AND POTTERS MARKS

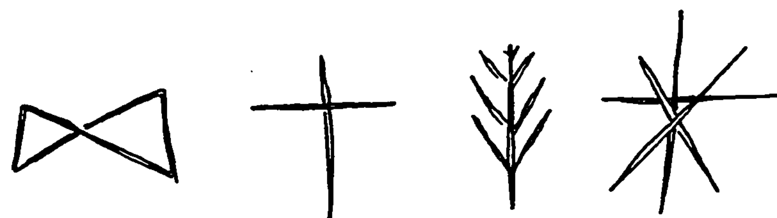
Apart from the large bowls described above, decoration on the typical wheel-made ware is rarely encountered in Margiana (as everywhere in the Central Asian tradition). In Period 2, however, there are three types of decoration:

Painted and incised designs PERIOD 2

Reddish-brown or brown-washed or painted applications as well as incisions are found on closed pots of various sizes from Period 2. A typical painted design might be several horizontal bands of reddish-brown paint around the shoulder and body of the pot. Incised wares with an overall design often follow the same pattern as the painted wares. For example, at Togolok 1, pots with similar incised and painted decoration are found both in rooms and in burials within the room complex. Similar vessels are also found at Gonur south and Togolok 21. From the deep sounding at Gonur (Layer 6) came a sherd decorated with an engraved design of a flower (or a flower shape).

Potters' marks PERIOD 2

Potters' marks are also found on Period 2 ceramics. They were incised on the bottom or underside of the vessels prior to firing. They are not common, but are found both in Margiana and in Bactria (Figure 4.31). Potters' marks are found on three areas of the vessels: on the base of the ceramics or on the bottom part; on the side or lower shoulder of the vessel; and on the inside of shallow bowls. These last are probably not "potters' marks" per se but have the same designs. Four designs are found in the ceramic assemblage that I studied from Togolok and Gonur: geometric cross motif, tree motifs, bow-tie motif, and star formed by



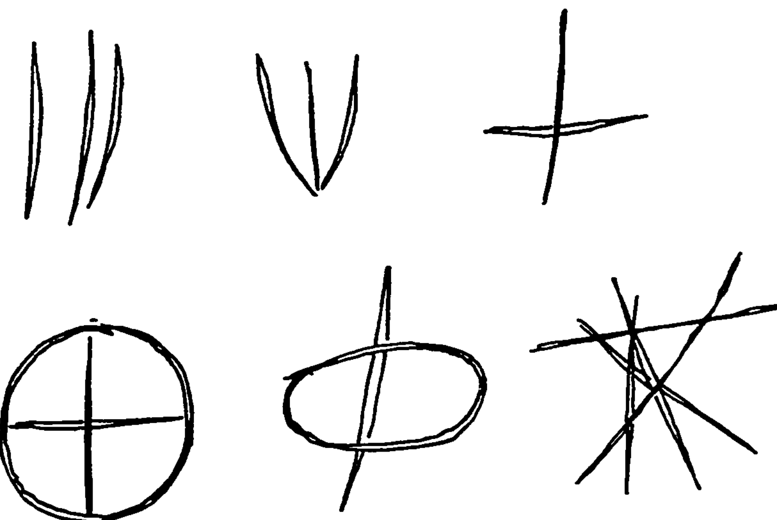




Figure 4.31: Potters marks, range of motifs

Top: Margiana (Togolok 21, Togolok 1, Gonur).
Bottom: Southern Bactria (Dashli).

intersecting lines (this motif is frequently found on ceramics from burials, not only on the bottom of the vessels, but inside bowls). Based upon the archives of the Soviet Expedition to Afghanistan, six types of potters' marks are found at Dashli 3, of which four are different from Margiana. Similar potters' marks are found at Djarkutan on cemetery vessels (Askarov and Abdullaev 1983). Most of the Bactrian ceramics with these marks come from burials; however, they are rarely found and do not allow specific inferences to be made about their meaning. The occurrence of the marks in Bactria and in Period 2 of Margiana provide another chronological link between the two regions at this time.

Seal impressions PERIOD 2

Finally, seal impressions are found on large storage jars which have been impressed prior to their being fired (Figure 4.32). Sometimes (as with cylinder seals) the sealing runs across the side of the vessel; and sometimes (as with stamp seals) it is on the rim or the upper side of the vessel. It is not clear whether these impressions were decoration or an administrative symbol marking the vessels. Seal impressions are also found on unbaked clay bullae in Period 2 from Gonur south.

Figure 4.32: Period 2- Stamp and cylinder seal impressions on ceramics

1) Type 3.B.1 or 3.B.2, Reddish-buff, buff ext. Med fine chaff., Seal impression on shoulder stamped prior to firing. Gonur surface.

2) Type 3.B, Red, Med fine chaff, incised decoration, and several stamp impression of one seal, prior to firing. Gonur south, surface.

3) Type 3.B.2, Examle of the location of BMAC type cylinder seals on ceramics, drawing based upon vessel found in 1990, Gonur south, room context.

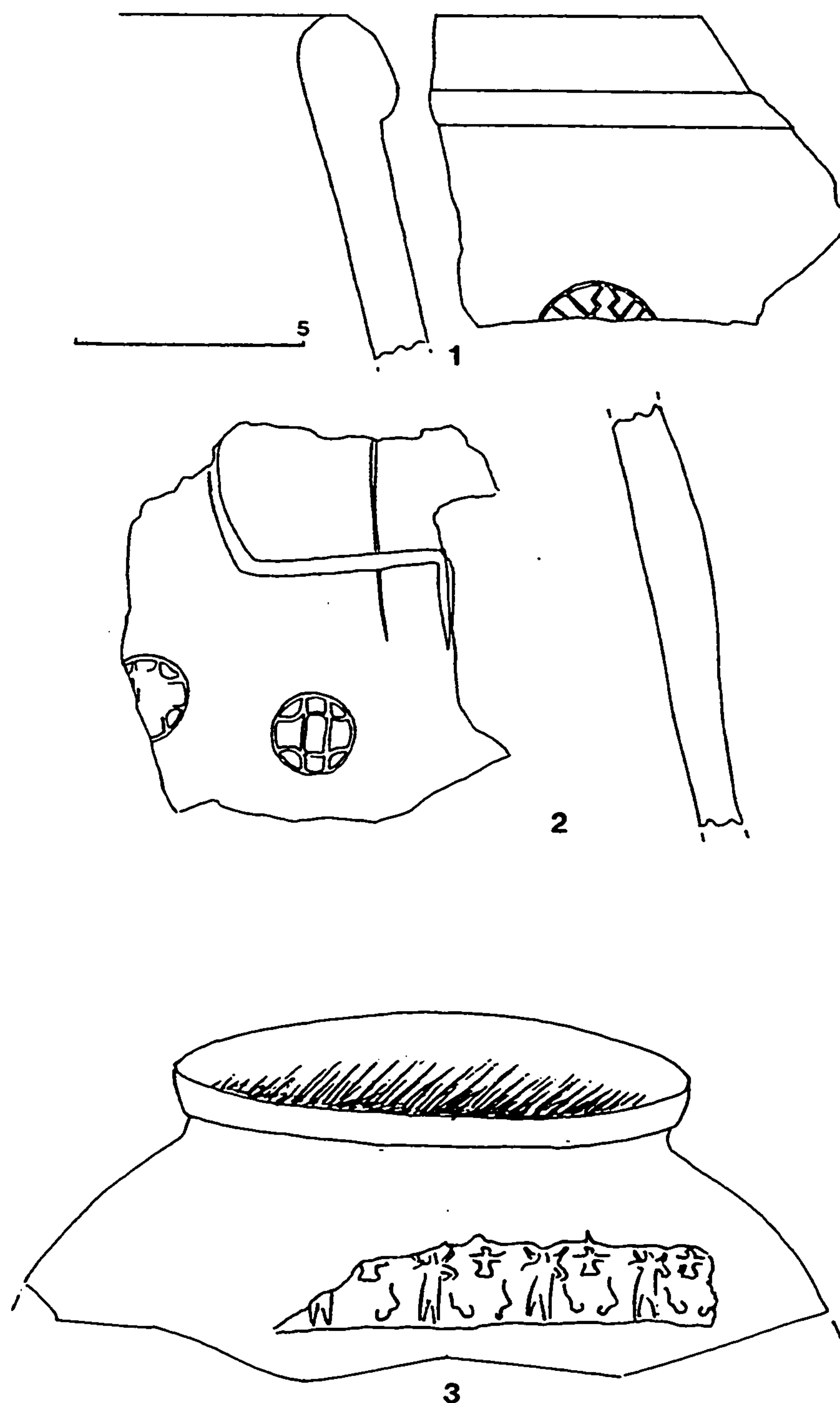


Figure 4.32: Period 2- Stamp and cylinder seal impressions on ceramics

COARSE WARE CERAMICS

"<u>Kitchenware</u>" PERIODS 1&2

These coarse ware ceramics have paste with distinctive large coarse grog temper in addition to fine chaff and fine well levigated quartz grains like the rest of the locally produced ceramics. Most of these vessels are handmade, often with the slab construction clearly visible. Some "kitchen ware" is made on a slow wheel. These ceramics are handmade in forms similar to the wheel-made forms, especially the closed vessels (3.B) and platters (6) (Figure 4.12:1,2). The fabric color varies from reddish buff to dark reddish gray.

Several examples of textile impressed "kitchenware" have also been found. One example, from mixed context (Layer 5), in the Gonur deep sounding, is impressed with cloth on the inside. Other examples from surface collections show cloth impressions on the exterior.

<u>Nomadic pottery</u> PERIOD 2

Andronovo type sherds have been found in rare but significant instances <u>in situ</u> in Bronze Age Margiana buildings. Andronovo "steppe nomadic" ceramics have been identified from within the large building complex of Togolok 1, on the floor. The ceramics are hand made, with fine grog and sand temper (Figure 4.33). The vessel forms are slightly closed wide-mouth jugs with patterns of comb stamped designs

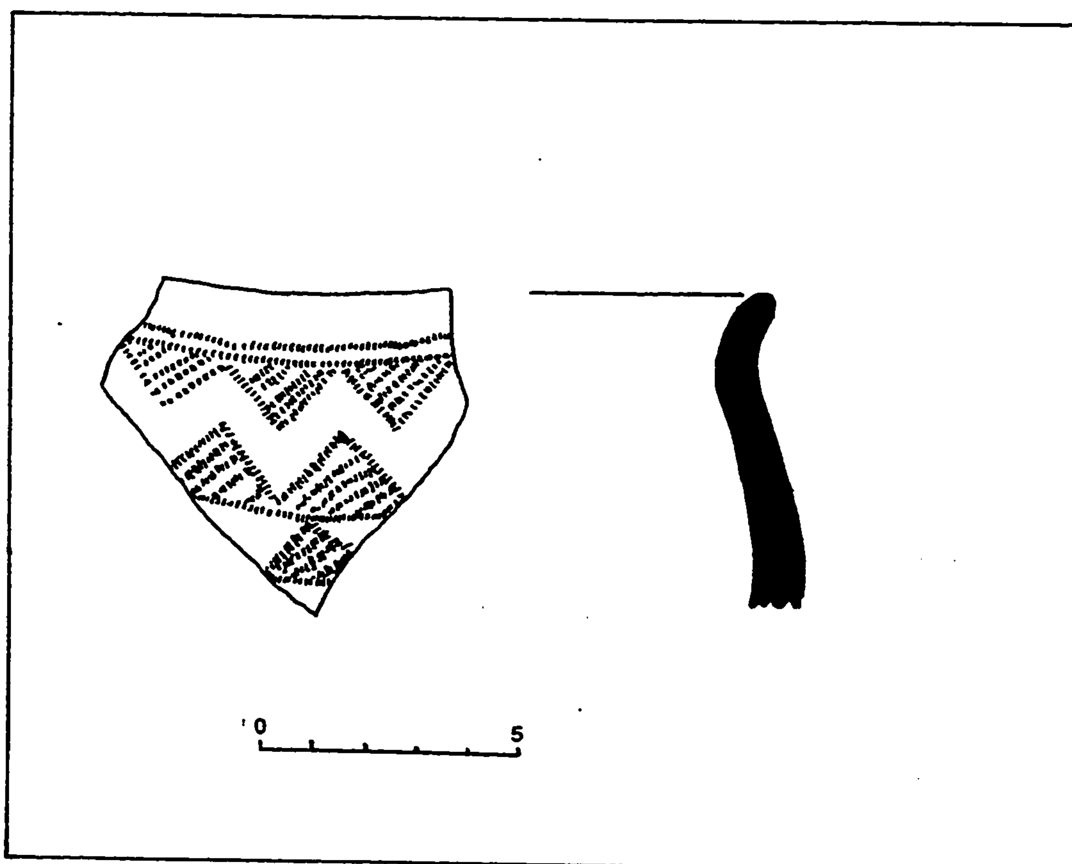


Figure 4.33: Example of handmade "steppe nomad" comb stamped ceramics found at Togolok 1, Room 14 Period 2 context.

on them. Following Kuzmina (1986) these are of the Early Andronovo (Fedorovskii) type (figure 4.34). This culture is primarily found to the northeast (up into the Altai) rather than to the northwest (near the Caspian Sea).

A small amount of other types of steppe ceramics have been found on Margiana sites, primarily on surface. Incised handmade ceramics typical of the steppe nomads of stage 4 and 5 of the pre-Aral area (Vinogradov 1968) have been found in Margiana (Sarianidi 1975b); none, however, from excavated contexts (Figure 4.35).

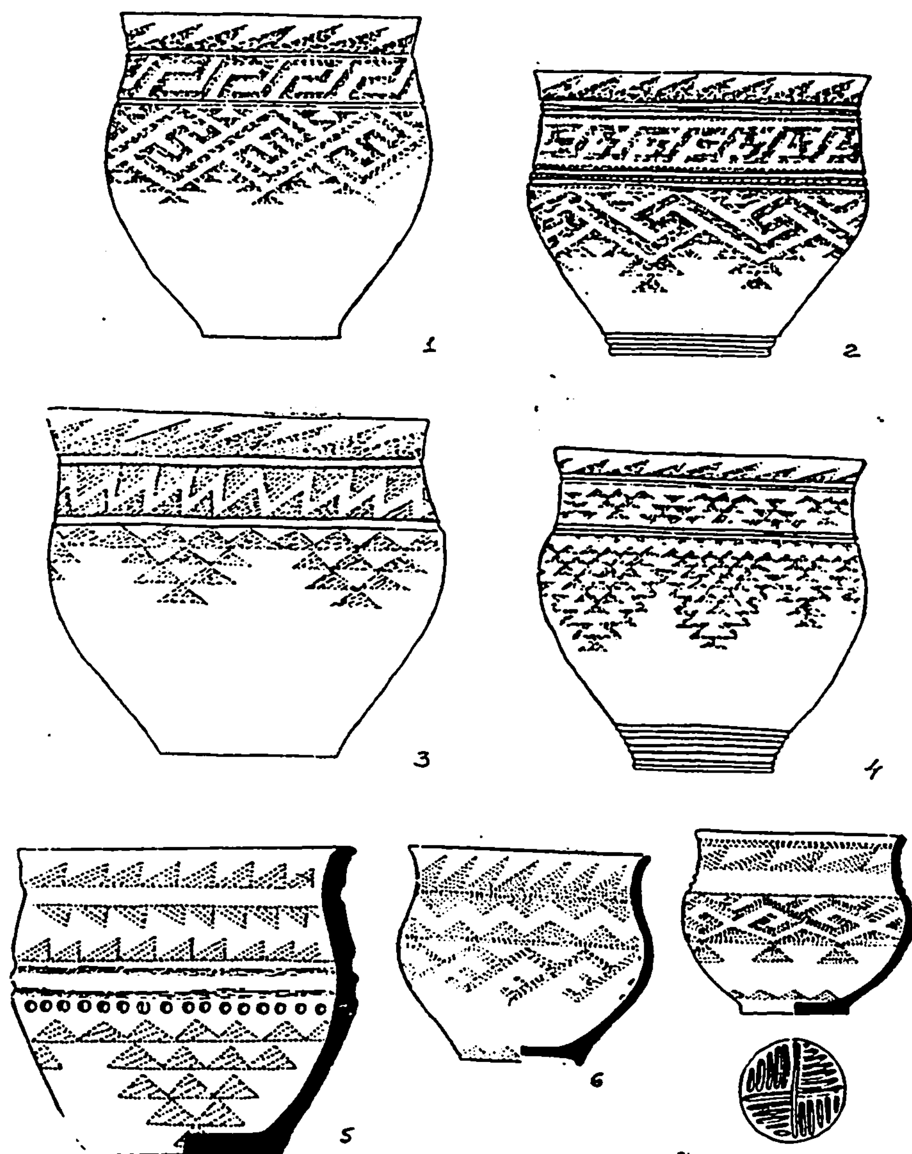


Figure 4.34:

Androvnovo ceramics of the Fedorovskii type: 1-4 early, from Borovoi; 5-7 late, from Zevakino and Sukhomesovo (Kuzmina 1986: fig 18).

Figure 4.35: "Steppe" ceramics from the surface of Gonur:

1. Smooth exterior surface, coarse grog temper, red with black core. Dia ~ 15 cm. Gonur surface.

2. Coarse sand temper, well fired, purplish red, buff interior and exterior surfaces. Dia ~ 18 cm. Gonur surface.

3. Coarse grog temper, poorly fired, dark red core, pinkish-orange exterior surfaces. Gonur surface.

4. Coarse grog temper, dark reddish grey core, red and grey exterior surface. Gonur surface.

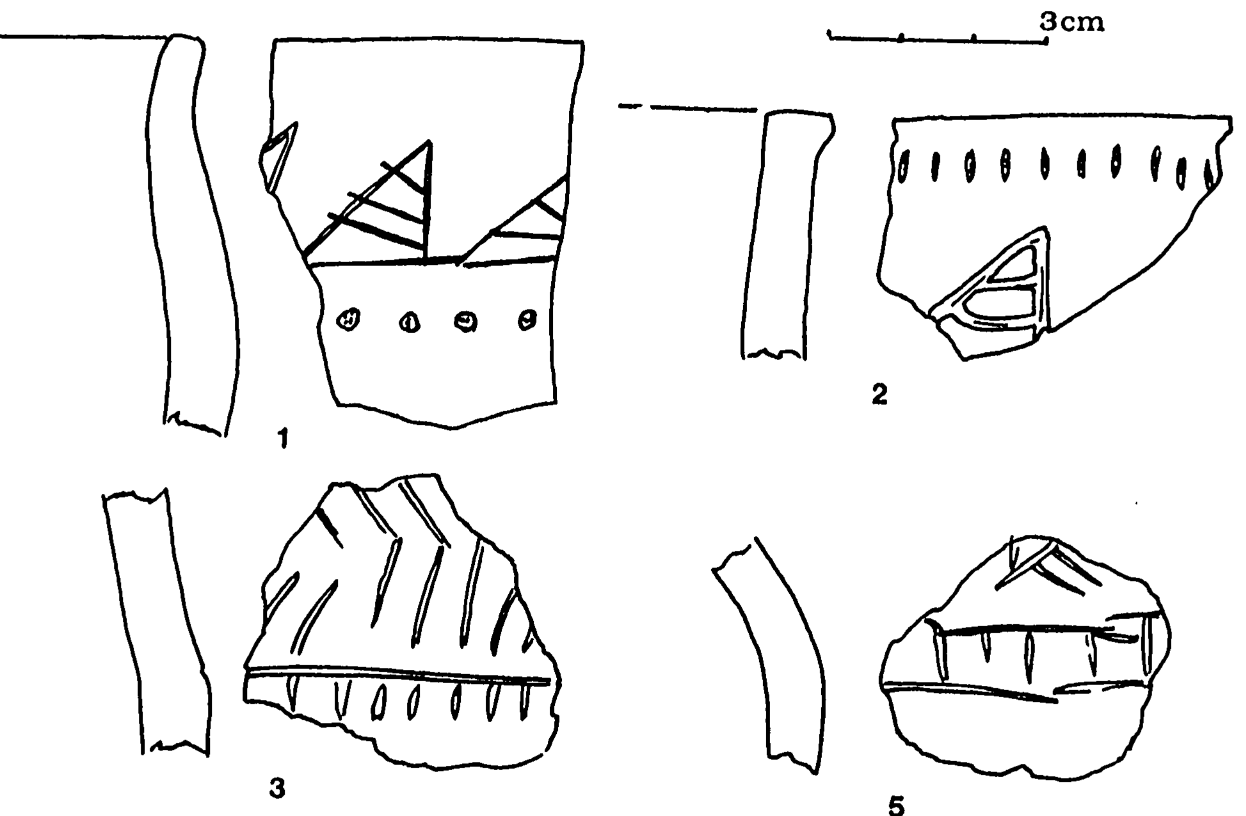


Figure 4.35: Steppe ceramics from the surface of Gonur: pre-Aral type (stage 4-5) incised coarse ware.

DISCUSSION

PERIOD 1 AND PERIOD 2 CERAMICS FROM THE GONUR DEEP SOUNDING

General trends in the wheel-made ceramics of Margiana which are not seen in the whole pot typologies, are reflected in the ceramics from the Gonur deep sounding. Sand tempering becomes slightly more common in Period 2. Across forms, rims tend to be more triangular, and necks tend to be taller through time. There is an increase in the number of small vessels and in the occurrence of spouts. Carinations are less sharp, a trend continuing from the very sharp early Namazga V ceramics of the foothill sites. Vertical lips become more common, and the rim becomes more deeply indented. The incidence of inturned rims is much higher (in Period 1 50% of rims are inturned, in Period 2 over 90%).

Many of the diagnostic forms that distinguish the two periods are in fact quite rare in the Gonur deep sounding. Key forms for the identification of Period 1 in the deep sounding are thin-walled plain rim bowls, biconical pots, and hole mouth pots (2.A.1, 2.B.1, and 2.B.3, respectively). Key forms for the identification of Period 2 in the sounding are thin walled triangular rim bowls (2.A.4), tall necked pots (3.B.4), deeply burnished gray ware imports, incised geometric designs on ceramics, and stamp seal impressions on the ceramics. Nomadic ceramics appear to be present in Layer 6, but no diagnostic decoration was found on the small body sherds.

According to the traditional ceramic chronology, the sharply grooved rim (2.A.3) is considered to be an indicator of Period 1, and vessels with the vertical lip (2.A.2) typical of Period 2 (Masimov 1981, Udemuradov 1989). In the sounding, the two rim forms are found together in Period 1, (16% sharply grooved and 12.5% vertical lipped). In Period 2, there is a clear majority of vertical lipped (16.5%) plus a small number (4%) of sharply grooved rim vessels.

PERIOD 1

Comparison of Gonur and Kelleli

First, the forms of the ceramics at Kelleli 3 and Kelleli 4 and Gonur layers 1-4 (Period 1) are very similar. The lack of several forms in the deep sounding at Gonur is most likely due to sample size, type of deposit, and frequency of breakage of the forms, rather than systematic differences between the sites. Piankova (1989) presents a surface collection of ceramics from Gonur north (Piankova 1989:pl.1 and 2) which includes almost all of the Kelleli forms. The ceramics strongly suggest that occupation at Gonur and Kelleli 3 and 4 were contemporary in Period 1.

Second, it is not possible to distinguish by eye the ceramics from the Kelleli 4 from those from Gonur Period 1 on the basis of the ware or temper. Yet, ceramic kilns found on each site suggest that ceramics were produced at both Gonur and Kelleli 4 during Period 1.

Finally, not all of the sites of the Kelleli oasis group have the same assemblage as Kelleli 3 and Kelleli 4. Geoksyur period campsites are included as Kelleli sites, and Kelleli 6 has a Period 2 type assemblage of ceramics and small finds (Masimov, unpublished notes).

Comparison of Period 1 with Namazga V in the foothills of the Kopet dag

The ceramics of the foothill late Namazga V sites are known from Altyn depe, Levels 0-2 (Masson 1988, Udemuradov 1987) and Ulug depe (unpublished opisi). It must be noted that the drawings of the ceramics from the upper levels at Namazga depe (Namazga V and VI) are too generalized to allow specific comparisons to be made to other sites (Khlopina 1972, 1981, unpublished opisi).

There is a high percentage of shared forms between the latest level at Altyn and the Period 1 ceramics in Margiana. Yet, both Udemuradov and Piankova consider that the assemblages are not identical. There are some differences in the forms present according to Udemuradov's typology (1987) (Figure 4.36). Distinctive rims of the late Namazga V ceramics come from biconical pots that are more sharply carinated than those in Margiana; and from thin walled open vessels and small lids which have distinctive inturned rims. Margiana Period 1 has more types of footed vessels, distinctive decorated large bowls and basins (3.A), and a greater incidence of mold-made bases.

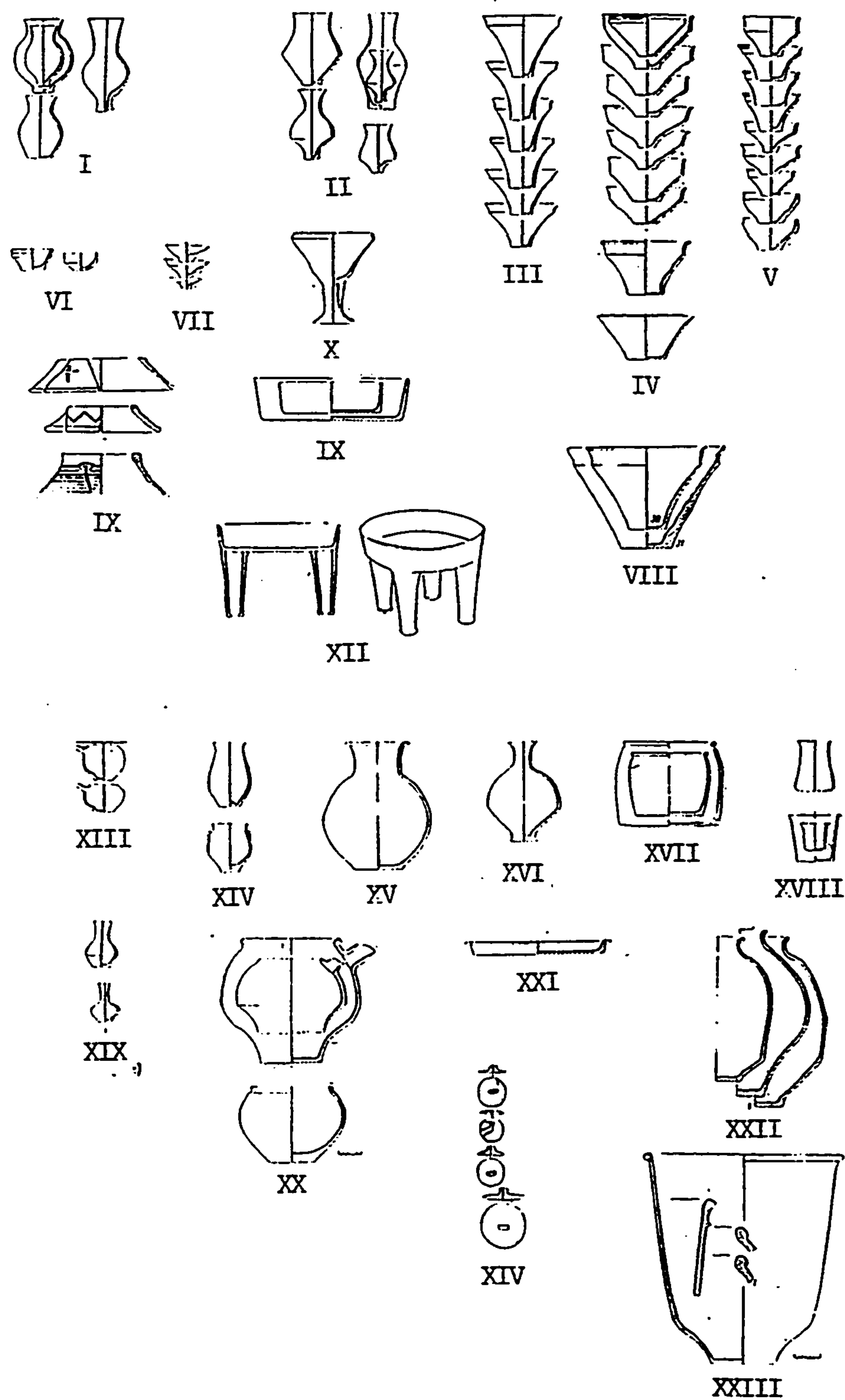


Figure 4.36: Ceramic typology from Altyn depe Level 0-2 (Udemuradov 1987) compared to Margiana Period 1.

ALTYN NMG V	MARGIANA PERIOD 1
I	2.B.1
II	close to 2.B.1
III	2.A.2, 2.A.3
IV	2.A.1
V	heavy form of 2.A
VI	1.A.1
VII	1.A.3 (rare in both areas)
VIII	large 2.A.2
IX	podstavki
X	Not found in Margiana
XI & XXI	platters
XII	footed platters
XIII	1.B.5 (rare)
XIV	2.B.3
XV & XVI	3.B.3
XVII	large 2.A.4
XVIII	2.A.4
XIX	1.B.1, 1.B.2
XX	3.B.1
XXII	3.B.2, 3.B.3
XXIII	4.A & 4.B
XXIV	Not found in Margiana

Piankova (1989:51) notes the lack of elongated biconical pots with flaring rims (Altyn type 2) and caldron-type pots (Altyn type 17 and 18) from Margiana, but these more characteristic of early Namazga V than of the late Namazga V. Several of the types that Udemuradov identified as being found only in the foothill region have now also been found in Margiana Period 1: one sherd of shaved buff ware is probably a hollow leg of a four legged vessel from the Gonur north domestic architecture. In addition, a distinctive ceramic animal head found at Gonur north (Figure 4.37:1,3) is closely paralleled at Altyn depe (Figure 4.37.2).

Imported wares from the Gonur deep sounding

The Namazga V ceramics from the eastern foothill zone are of a different ware than those from Margiana due to the different clay sources. Altyn depe wares are medium fine buff with fine sand and mineral temper; the Ulug depe fine buff-to-red ware sometimes has white (possibly lime?) inclusions. The Ulug ceramics often have a light colored exterior with a carefully finished exterior surface, similar in appearance to a slip (personal observation of collections in Moscow and Ashkhabad). The wheel-made ceramics from Namazga depe (Periods 5 and 6) are fine ware with a distinctive green color and whitish green exterior surfaces (personal observation of collections in Leningrad and Ashkhabad). Sometimes the surface discoloration is considered to be a slip; however, under low magnification it

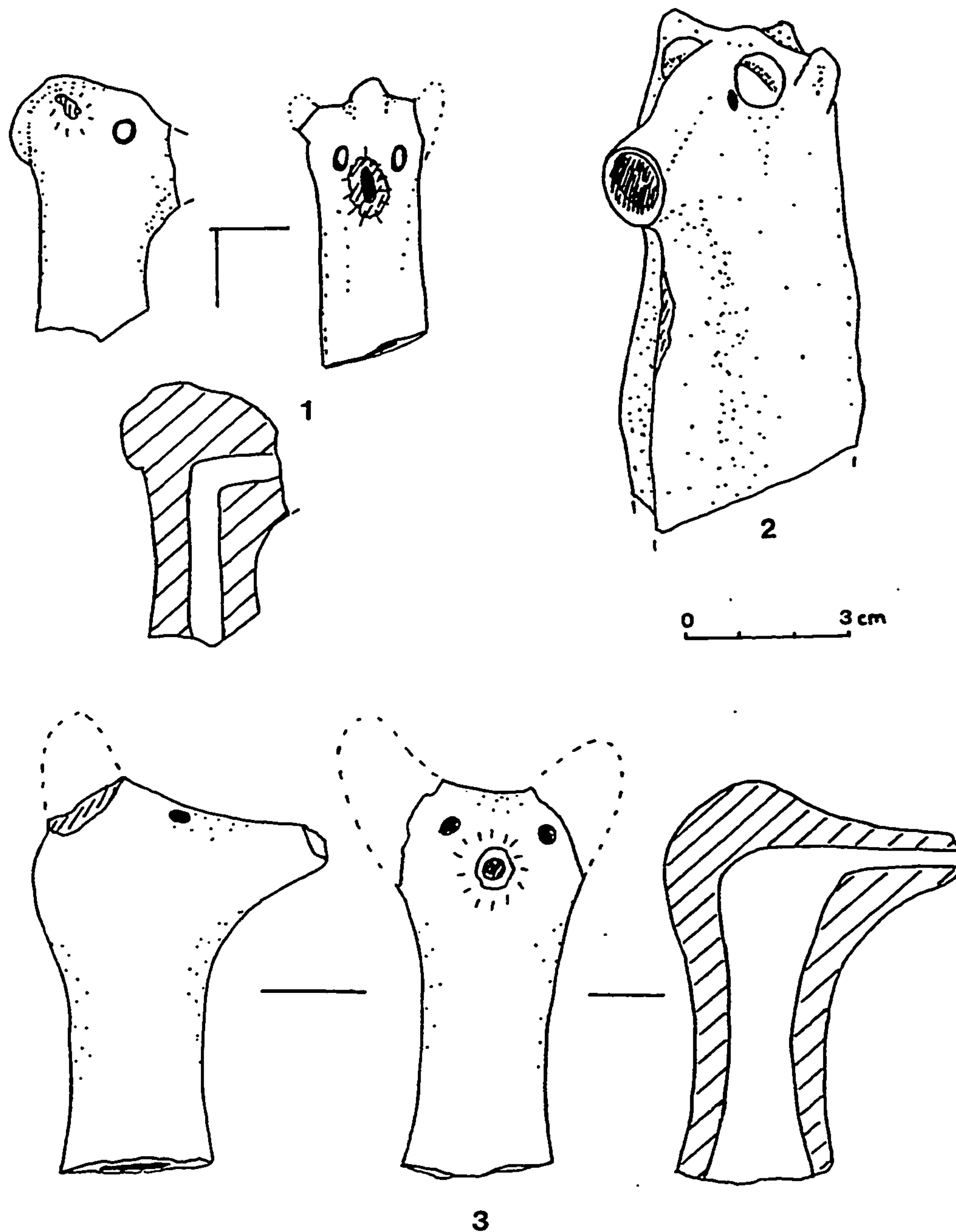


Figure 4.37: Period 1 zoomorphic ceramic head spouts.

1) Gonur north, kremel
2) Altyn depe, Exc. 5, street.
3) Go nur north, surface

is clear that this is not an applied slip but a discoloration (collections in Ashkhabad and Leningrad).

Deep sounding Layers 1-4 yielded a small amount of green or greenish-white ceramic made on a fast wheel with sand temper. This configuration is typical of the ceramics from the NMG V levels of Namazga depe. Other sand-tempered medium fine sherds may have been imported from Altyn depe, where the forms are very close to the Margiana forms. This should be tested by a specialized study of the paste, which was not done in the field. No ceramics similar to Ulug ceramics were recorded from the deep sounding. Altogether, it is unlikely that ceramics were an important import from the foothill area, given the high level of local production of wheel-made ceramics.

Grey ware

All excavated first period sites have a small amount of grey ware ceramics. This occurrence was quantified at Gonur north, where in the domestic architecture they comprise 3% of the body sherds. True grey ware is an easily identified import in this region, where buff and red pastes are remarkably uniform.

Most of these grey ceramics are misfired pieces of the local medium-fine buffware. These ceramics are found in the domestic ceramic debris and indicate that the vessels were used despite having been misfired.

Greyware ceramics from Kelleli 1 have different forms

and probably do represent imports. They are considered to be similar to the carinated grey ware found at Ak-depe near Ashkhabad (Masimov 1979b, Udemuradov 1986) and are the main evidence for proposing a Namazga IV date for Kelleli 1. Ak-depe is known for its NMG IV carinated grey wares (Sarianidi 1976). However, most Ak-depe ceramics are made of grey ware, including in the Namazga III, IV, and V periods, and are not just confined to the best known Namazga IV levels at Ak-depe. Greyware is found in the Namazga V levels as a small but consistent component of the ceramic assemblage in the stratified sites of the foothill zone of southwest Turkmenistan. For example at Ulug depe, grey ware is 5-10% of the Namazga V assemblage (personal observation, Moscow).

Greyware is also found to the east of Margiana at Zamanbaba. While the site's relative date is debated, it is possibly late Namazga V (Sarianidi 1979c). Other grey wares from the Iranian plateau (Hissar, Tureng depe, etc.) (Cleuziou 1986) and from the Indus valley, at sites such as Rehman Dheri (period 3) (Durrani 1988) do not have the same forms as those found in Margiana.

Thus, dating the Kelleli 1 settlement on the basis of carinated greyware paralleled to Namazga IV at Ak-depe is untenable, since there is no other Namazga IV material from Margiana or from the foothill zone at Geoksyur (Sarianidi 1961).

Lack of comparison of Period 1 with Bactria

Northern and southern Bactrian sites do not share the key index ceramic forms of Period 1 with Margiana or the late Namazga V assemblages. Later (BMAC) assemblages of ceramics from northern Bactria also have a greyware, which is burnished and has mica in the temper. No grey ware of this type has been found in Period 1, while it is found in Period 2 of the deep sounding at Gonur. There is no closely related contemporary occupation in northern and southern Bactria, although a local culture may have existed there at that time.

PERIOD 2

Period 2 ceramics in Margiana

Key forms for the identification of Period 2 in the Gonur sounding are thin-walled triangular rim bowls (2.A.4), tall necked pots (3.B.4), deeply burnished gray ware imports, incised geometric designs on ceramics, and stamp seal impressions on the ceramics. "Andronovo" (steppe nomadic) ceramics appear to be present in Layer 6, but no diagnostic decoration was found on the small body sherds.

The differences between the sounding ceramic assemblage and the Togolok assemblages are largely due to the smaller sample size. These five diagnostic types are found at all Period 2 sites. The excavations at the Togolok sites was extensive and a wider variety of ceramic forms was found

there. Distinctive rare forms include bottles, spouted vessels, footed goblets, and large decorated bowls. There are also functional differences between Layer 6 of the Gonur sounding (a midden from a production quarter), Togolok 21 and Togolok 1. These large building complexes undoubtably include elite or ritual areas which include different types of vessel than do production areas. Distinctive of Togolok 21 are bridged and open spouts, "ritual" vessels with terracotta figurines on the rims, and painted designs on the local ware.

Period 2 and Bactria

In northern Bactria, ceramics from the excavations of buildings and burials at Sapalli and Djarkutan relate directly to the Margiana Period 2 ceramic assemblage. Typical forms of ceramics of both Sapalli and Djarkutan include every type category of Period 2 ceramics from Margiana (Figure 4.38). The differences are primarily in the occurrence of inturned rims, the lack of carinations on the goblets, larger goblets and other footed vessels, and scarcity of the large open bowls and basins with a terracotta frieze. It is unknown if Andronovo ceramics occurred at Sapalli or Djarkutan. Sapalli and Djarkutan are stratigraphically and chronologically separate, but both of the sites have BMAC type small finds of a kind found only in Period 2 of Margiana.

From southern Bactria the ceramics from burials have

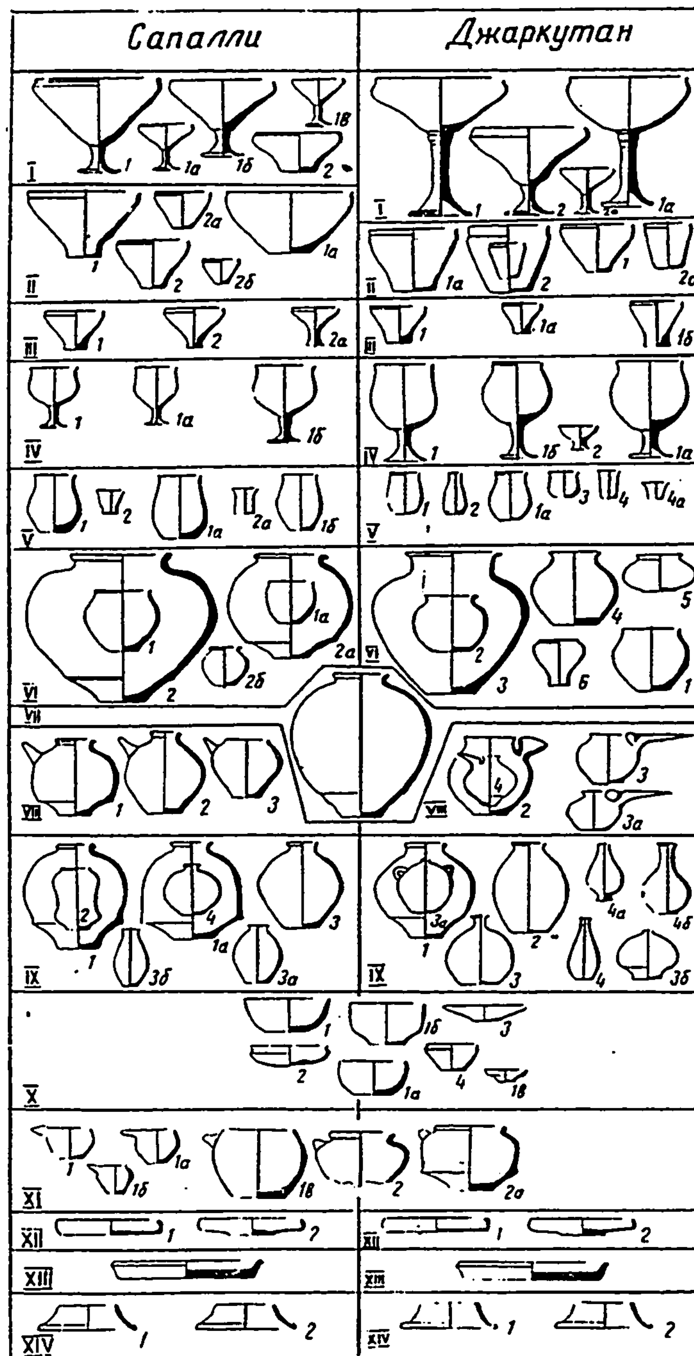


Figure 4.38: ceramic typology from Sapalli and Djarkutan (Askarov 1977).

been illustrated, while none have been illustrated from the widespread excavations at Dashli 1, and the two completely excavated building complexes at Dashli 3. The ceramics from Dashli 3 burials are similar in all categories of types to Sapalli and Djarkutan (Sarianidi 1977: fig 25). A large open basin with a terracotta frieze was found in a cenotaph from the Dashli oasis (Sarianidi 1979b).

Imported pottery from Bactria

Northern Bactrian ceramic tradition ware is red to reddish buff with fine to heavy micaceous mineral temper that is visible as sparkle in a fresh break. Reddish-grey ware with micaceous inclusions and a distinctively streak-burnished exterior surface is a small (~3% of the assemblage) but constant component from the sites of northern Bactria (personal observations of collections in Samarkand and Tashkent).

The primary ware of the ceramics from the southern Bactrian site of Dashli 3 is buff-red ware with sandy temper (Sarianidi 1977). A small number of burnished reddish-grey ceramics, from Dashli in southern Bactria, appear to have been imported from northern Bactria (Sarianidi 1977:70). No samples of ceramics from Dashli were available for me to study in Moscow to compare to the ceramics of Margiana.

A small amount of the northern Bactrian burnished grey micaceous ware was found in Layer 6 of the Gonur deep

sounding. A large short necked storage jar (khumcha 3.B.2 type form) from the upper levels of Gonur kremel is exactly parallel to a burnished grey ware vessel from burial 89 at Sapalli (Askarov 1977 pl.23).

In general, the wares of northern Bactria and Margiana Period 2 ceramics are distinctively different, but the forms are very similar. While the imported vessels attest to contemporanity, ceramics were not an important exchange item between Margiana and northern Bactria.

Lack of foothill zone parallels

None of the distinctive red slipped ceramics from Namazga depe 'Namazga VI' deposits have been found in Margiana associated with the BMAC. The original parallels with Namazga VI and Margiana were made with the later Takhirbai ceramics (Masson 1959) and not the Togolok (or what are here called Period 2) ceramics. Khlopina's parallels between Namazga depe and Margiana rely primarily on the ceramics types characteristic of wheel-made ceramics throughout Central Asia, rather than on key chronological forms of Period 2 in Margiana (Khlopina 1981).

On the other hand, it is possible that other "Namazga VI" sites in the foothill zone have Bactria-Margiana type burials. The burials at Yangi-kala (Ganyalin 1956) and "Namazga VI" burials at Ulug depe have closer ceramic parallels with Period 2 of Margiana and Bactria than with

Namazga depe. Finds from Ganyalin's hoards at Altyn depe have parallels with the small finds of Period 2 (Ganyalin 1967). Farther west, the Hissar IIIC 'hoards' may in fact be BMAC type cenotaphs without Bactrian-Margiana type ceramics, since the small finds are typical of the BMAC.

CONCLUSIONS

The Bronze Age ceramics are tremendously conservative in Margiana. Only two periods can be defined; early (Kelleli 3, 4, Gonur Period 1) and late (Togolok 1, Togolok 21 and Gonur Period 2). I expected to be able to refine this ceramic chronology from the Gonur deep sounding; however, I could find no strong changes in the ceramics in the four stratigraphic layers of Period 1; and from Period 2, there is no clear difference between Layer 6 of the sounding and the earliest architectural phases and the latest burial phases on sites such as Togolok 21 and Togolok 1. Both the stratigraphy and ceramics strongly suggest that there is continuity of occupation from Period 1 to Period 2 at Gonur, and in Margiana.

I found that while there are several "index" forms for each period, they are relatively rare. In addition, commonly used "index" forms, such as the thin walled bowls, are not exclusive to Period 1 or to Period 2. In many cases, it is not possible to tell archaeological deposits of these periods apart because the ceramic tradition of Periods 1 and

2 are so similar. This situation contrasts with the architecture and the small finds of these periods.

The ceramics within each type at Gonur are very standardized as seen from the deep sounding ceramics. While there is no evidence of mass production in Margiana, this standardization implies intensive information flow between potter workshops (Arnold 1991). Within the context of bureaucratic control of exchange and production seen in the architecture and the small finds, this type of production is found in many state level societies (Lamberg-Karlovsky 1981).

There are few differences in the ceramics from the foothill sites of the late Namazga V and Period 1 in Margiana. The ceramic parallels provide the best evidence that the initial widespread occupation in Margiana was from the foothill zone. Yet, the occurrence of imported ceramics is rare.

In Period 2 there are many parallels with the ceramics of Bactria. While exchange in ceramics does not characterize either Period 1 or Period 2 of Margiana, the occurrence of the rare ceramic imports in Period 2 is important: the ties with Bactria and the occurrence of Andronovo ceramics (and the lack of parallels with the foothill settlements) indicate an important shift of interaction spheres.

CHAPTER 5

ABSOLUTE CHRONOLOGY AND RADIOCARBON DATES

The radiocarbon dates presented in this study can be broken into three groups. First, a series of new radiocarbon dates from the 1989 season of excavation at Gonur depe and other newly analyzed data from sites directly relate to Periods 1 and 2 of Margiana. Second, previously determined radiocarbon dates from Margiana are calibrated and presented with the new dates. Finally, radiocarbon dates are presented from other regions of Central Asia and from areas outside of Central Asia (the Indus and Iran) from layers that include Margiana and Bactrian type objects.

Radiocarbon analysis has advanced in recent years, both in terms of our understanding of how to interpret the data generated by the labs and in terms of the numbers of determinations available the analysis of large numbers of radiocarbon samples from excavated contexts in the region. Particularly important in has been the systematic use of calibration. As the recent compilations of dates from Central Asia (Kohl 1984) and South Asia (Possehl 1989) employ a single calibration technique, it is possible to obtain a uniform radiocarbon chronology for the whole region.

Radiocarbon analysis was a popular technique in

Soviet archaeology in the 1970-80s (for example, Kurtis 1981; Ivanova, Kind and Cherdyntsev 1984), and many samples from Bronze Age Central Asian sites were analyzed. However, the lack of coherent clusters of radiocarbon dates led many researchers simply to pick and choose dates which best fit their preferred chronology based upon cross-dated artifacts. In addition, the use of radiocarbon dates that were not calibrated led to the formation of two sets of radiocarbon chronologies for the chronology of Central Asia- an older calibrated chronology and a younger uncalibrated chronology. Many scholars chose to avoid radiocarbon data altogether.

THE RADIOCARBON PROJECT

One of the primary goals of our collaborative field project was the collection of radiocarbon samples from contexts directly associated with each of the two ceramic periods. Charcoal samples were collected from each area of ongoing excavation at Gonur depe, from specific contexts at Togolok 21, and from Djarkutan in northern Bactria.

Previous radiocarbon determinations from Margiana are incorporated into this analysis where the lab conditions could be taken into consideration and where the associated ceramics, sample location, and type of deposit could be determined. Most of the Margiana determinations up to now have been made at the laboratory in Leningrad. That laboratory has participated in comparative tests on samples

from Gonur depe, which were analyzed in Helsinki in order to estimate the variation between labs (H.Jungner pers. comm.).

When calibrated, many of the previously analyzed radiocarbon dates from Central Asia group in a coherent manner with the new dates, as well to related sites in the neighboring areas of the Indus and Iran.

The new dates from Margiana

Nine new radiocarbon samples were analyzed at Beta Analytic Laboratory in Florida, USA. The calibration is based upon the CALIB 2 IBM-based computer program (Stuiver and Reimer 1986). Figure 5.1 illustrates the discrepancy between the ideal radiocarbon chronological scale (straight line) and the irregular distribution of dates for samples of known age. As an example of the calibration process, one date (Beta-33560) is shown crossing the calibration "curve" of known dates three hundred years earlier than the radiocarbon date would indicate.

The standard deviation (1 or 2 sigma) of the dates provide an estimate of the single date and not of the duration of the period. Radiocarbon dates in the Bronze Age of Central Asia can provide dates with ranges no smaller than 200 years. The range may often be broader, depending upon the sample size and laboratory conditions. Radiocarbon dates are expressed in terms of a confidence level which depends on sample size and lab conditions.

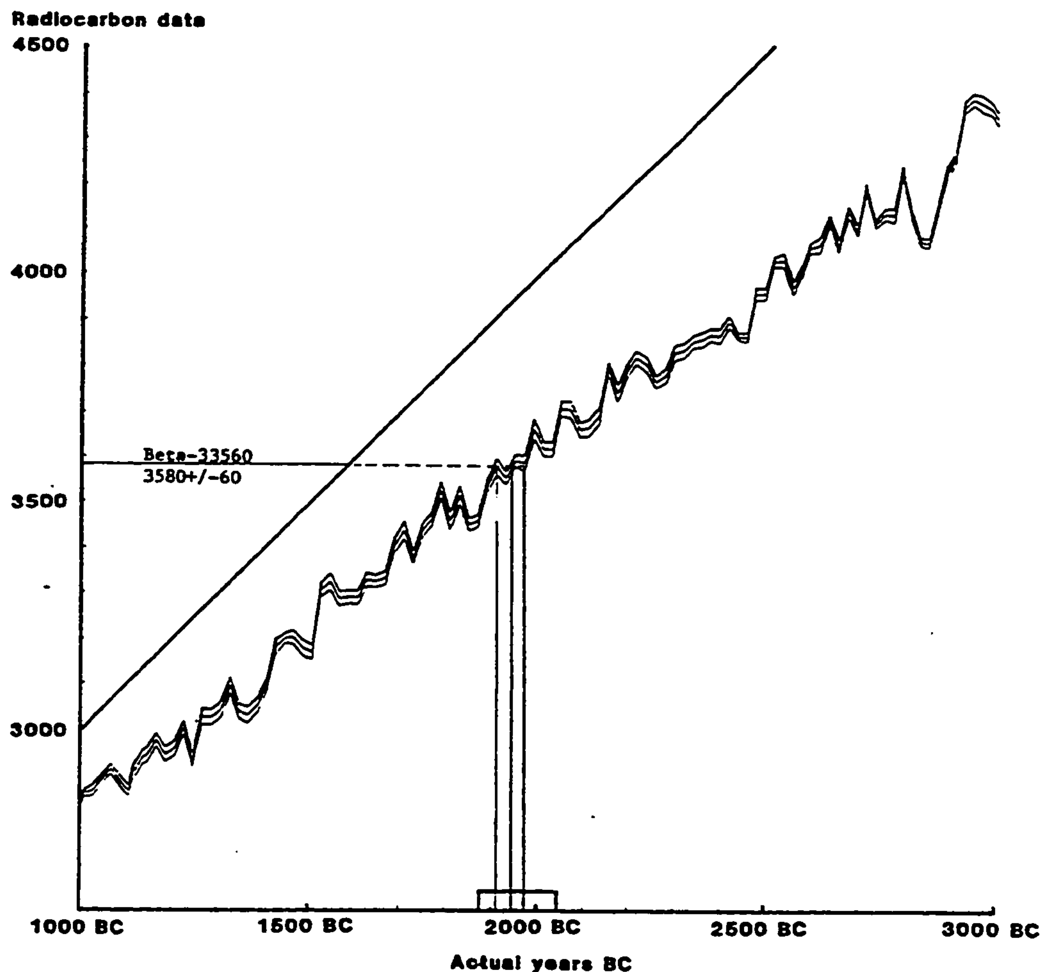


Figure 5.1. The difference between radiocarbon data (Y-axis) and actual years (x-axis). The calibration line is based upon a series of radiocarbon analyses which have a range of variation (expressed as a tripled line here). A single radiocarbon date may correspond to several points on the calibration line (Beta-33560 crosses the line three times). The rectangle on the x-axis represents the range of dates possible based upon 1 standard deviation.

Period 1: description of contexts

The radiocarbon samples best correlated with the ceramic samples employed in this study, come from the excavations at Gonur depe (Figure 5.2). One large sample (#1 in the list below) was from the Layer 3 of the Gonur 'deep sounding', associated with Period 1 ceramics in a large charcoal-rich lens of oven sweepings. Another Gonur north sample (#2) was from the excavations of Period 1 domestic architecture, sealed between two floor levels. A sample (#3) from the lowest level of a stratigraphic sounding inside of the monumental architecture (the kremel) corresponds to its earliest occupational level. Finally, one sample (#4) comes from a pit sealed beneath the architectural complex on the south mound at Gonur. Although no architecture or occupational levels have been found beneath the main south mound architecture which dates to Period 2, the pits located there include fragmentary ceramics and a few small finds (such as a terracotta figurine) that are similar to the materials from the lower levels of the deep sounding on the north mound. These well-provenanced dates cluster around 2100-1900 BC, and there is a 95% chance that the dates belong in the range from 2290-1840 BC.

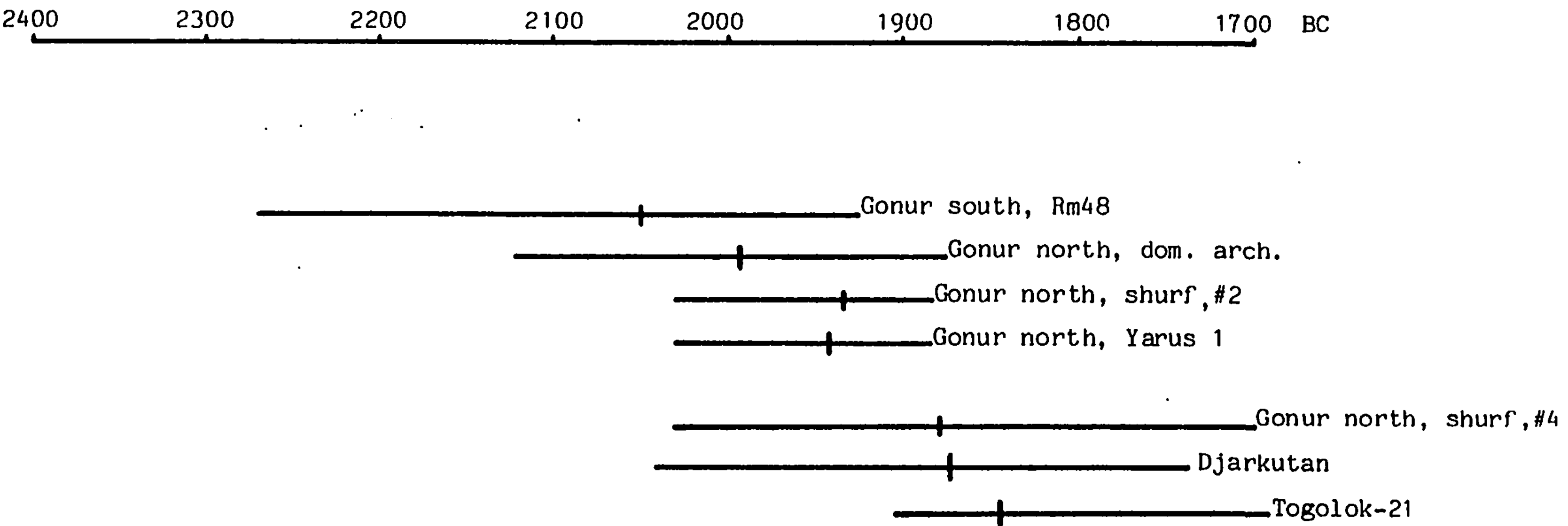


Figure 5.2. New radiocarbon dates from Margiana

PERIOD 1 Uncalibrated Calibrated Calib range

1.Gonur north,
deep sounding, Layer 3
(RC #2)....................3580+/-60...1936 BC...2032-1883 BC
From sloping midden in the
sounding 2.60 meters below
surface.
Beta-33560

2.Gonur north
(domestic architecture)....3630+/-90...1994 BC...2138-1888 BC
From sealed context just below
the floor of Room 2
Beta-35125

3.Gonur north
(1981 excavations).........3560+/-70...1908 BC...2047-1840 BC
From Yarus 1, Sarianidi's
excavation at the Kremel
(Sarianidi 1981)

4.Gonur south
(pit beneath Room 48)......3700+/-60...2067 BC...2290-1930 BC
A large charcoal filled pit
beneath the walls of the main
architecture. From before
the building was built.
Beta-33562

Period 2: description of contexts

Period 2 radiocarbon samples come from several sites which are associated with Margiana Period 2 and especially with the small finds of the Bactrian-Margiana Archaeological Complex. One sample (#1 in the list below) came from the deep sounding at Gonur, Layer 6, a large charcoal filled lens of oven sweepings similar in nature to the deposit of Layer 3 (Period 1, see above). From the site of Togolok 21, I was able to collect a sample (#2) from a dense layer of charcoal sealed beneath a secondary floor at the 'altar

complex' (Bolshoi altar) in the northeast corner. A third sample (#3) came from the northern Bactrian site of Djarkutan, from the recently excavated 'temple' (courtesy of A.Askarov). This sample is from the central hearth, and is associated with typical Bactrian-Margiana type finds such as bone tubes, bronze seals, and stone stamp seals all of which are almost identical to those found at Togolok 21 (Askarov and Shirinov nd). These well provenanced dates cluster around 2000-1700 BC, and there is a 95% chance that Period 2 (BMAC) dates belong in the range from 2042-1680 BC.

Period 2

	Uncalibrated	Calibrated	Calib range
1.Gonur north deep sounding, Layer 6, (RC #4) From sloping midden in the sounding 1.20 meters below surface. Beta-33561	3520+/-60	1883 BC	2030-1694 BC
2.Togolok 21 Bolshoi altar, sealed under secondary floor Beta-33564	3470+/-100	1846 BC	1920-1680 BC
3.Djarkutan khram Bolshoi altar Beta-33557	3540+/-70	1888 BC	2042-1734 BC

Data not used

Three analyses were disregarded for specific reasons (Figure 5.3). The first discarded date is from a hearth deposit located on the first occupational level just above the sterile sand in the Gonur deep sounding. The sample

Three samples not included:

Gonur north......................4330+/-70
(domestic architecture)
from hearth no.1 on the
floor of room 2.
Beta-33563

Gonur north......................3470+/-100
(kremel)
From a hearth chimney built
into the wall in room 36.
First construction period?
Not associated with any ceramics
Beta-33563

Gonur north......................3300+/-80
(shurf #1)
from lowest black level
in the shurf, layer 1.

Figure 5.3. Radiocarbon dates not used from new analyses.

contained too little carbon after processing in the lab.

The second discarded analysis had a heavy stable carbon isotope signature. This indicates a problem in the processing of the sample, since no such "heavy" carbon would have been available as vegetation in this area. Contamination of the sample is suspected.

The third discarded analysis was a good sample, but the date did not correspond to the cluster of Period 1 and Period 2 dates. This sample was recovered from a hearth sitting on the floor. It was either contaminated with older carbon or was old wood that had been found on the desert surface.

The previous dates

Twelve previously analyzed radiocarbon samples are from Gonur north (kremel) and from Togolok 21 (Sarianidi 1990). I documented the context of these samples in the field as to stratigraphic position and associated ceramic assemblage. The calibrated samples of six of the samples cluster well with the radiocarbon samples from the Gonur deep sounding (Figure 5.4).

The samples from Gonur come from the floor of the monumental building (kremel) on the north mound, which has ceramics and small finds similar to Period 1 of the nearby deep sounding. Two of the four samples from excavations on the north mound excavations of the monumental building fall

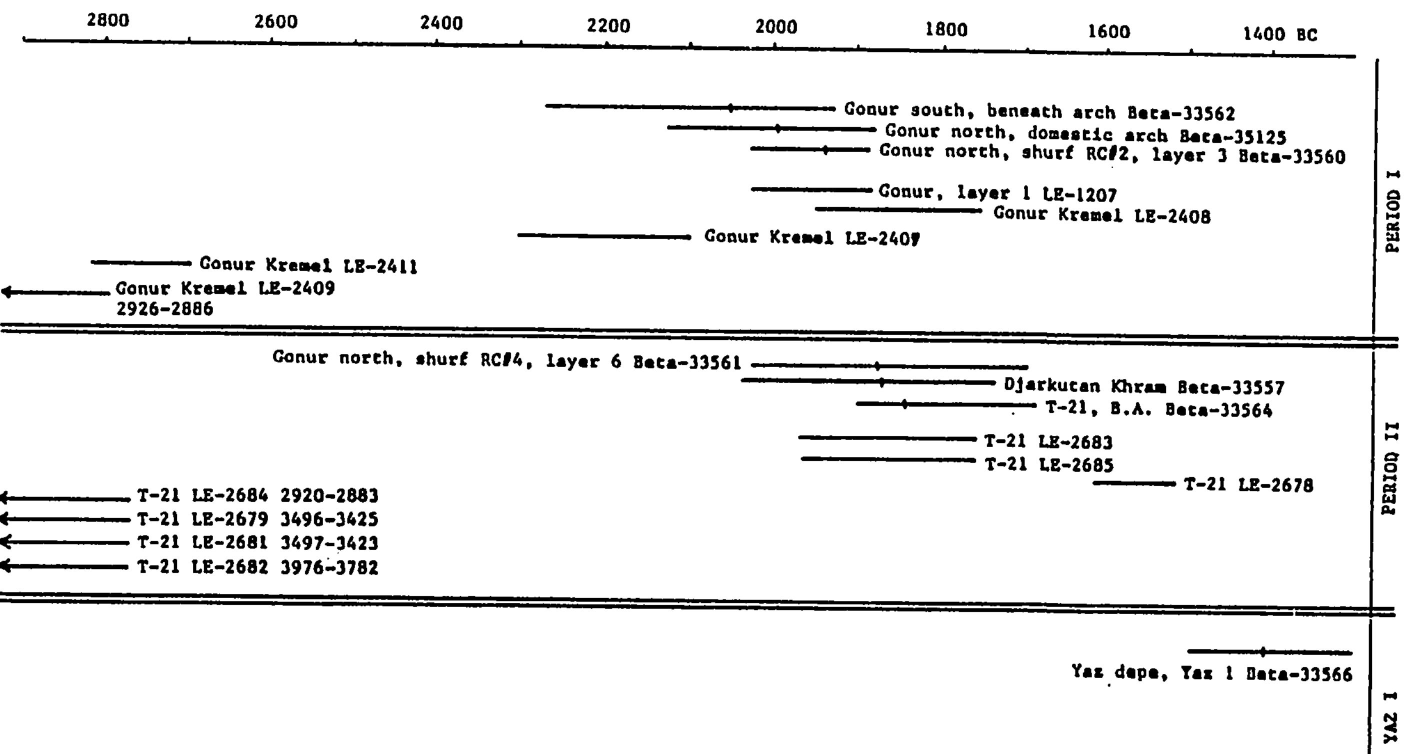


Figure 5.4. Radiocarbon dates from Margiana. Lines with mid-points are the new data. Lines without mid-points are previously analyzed dates.

into the same cluster as the new radiocarbon dates. Two samples date much earlier, despite the fact that they were associated with the Period 1 ceramic assemblage.

Period 1

Sample	Uncalibrated	Calibrated	Calib range
Gonur north (Kremel Room 5) LE 2408	3510+/-40	1830 BC	1952-1742 BC
Gonur north (Kremel, Layer 1) LE 1207	3560+/-70	1908 BC	2047-1740 BC

The samples from Togolok 21 correspond to Period 2 of the Gonur deep sounding. Three dates cluster around a midpoint of 1800 BC. There are several dates which appear early, although they do not form a cluster. The early dates from Togolok 21 may indicate some systematic type of contamination, such as the use of old wood from the surface of the desert.

Period 2

Sample	Uncalibrated	Calibrated	Calib range
Togolok 21 (Room 60) LE 2678	3270+/-40	1526 BC	1673-1494 BC
Togolok 21 (Room 64) LE 2683	3540+/-40	1888 BC	1982-1759 BC
Togolok 21 (Room 47) LE 2685	3540+/-40	1888 BC	1982-1759 BC

Interpretation

When calibrated, the radiocarbon dates for the two Bronze age periods cover a time period from the late third millennium to the mid second millennium. Gonur depe Period 1, the late Namazga V ceramic complex, dates to ca. 2200-1900 BC. Gonur depe Period 2, the Bactria-Margiana Archaeological complex (BMAC) as dated from Gonur depe and Togolok 21, date to ca. 2000-1700 BC. Only when the radiocarbon dates are associated with ceramic assemblages can they provide a baseline for the chronology of this Central Asian Bronze Age oasis of Margiana. While the distribution of radiocarbon dates associated with Period 1 and Period 2 overlap, there are two distinct midpoints: 2000 BC (Period 1) and 1800 BC (Period 2).

Parallels

Calibrated radiocarbon results from sites with comparable archaeological material in Iran, the piedmont of Southern Turkmenistan, Bactria and the Indus Valley are presented in Figure 5.5. The lines represent the one standard deviation range as calibrated with the CALIB 2 calibration program.

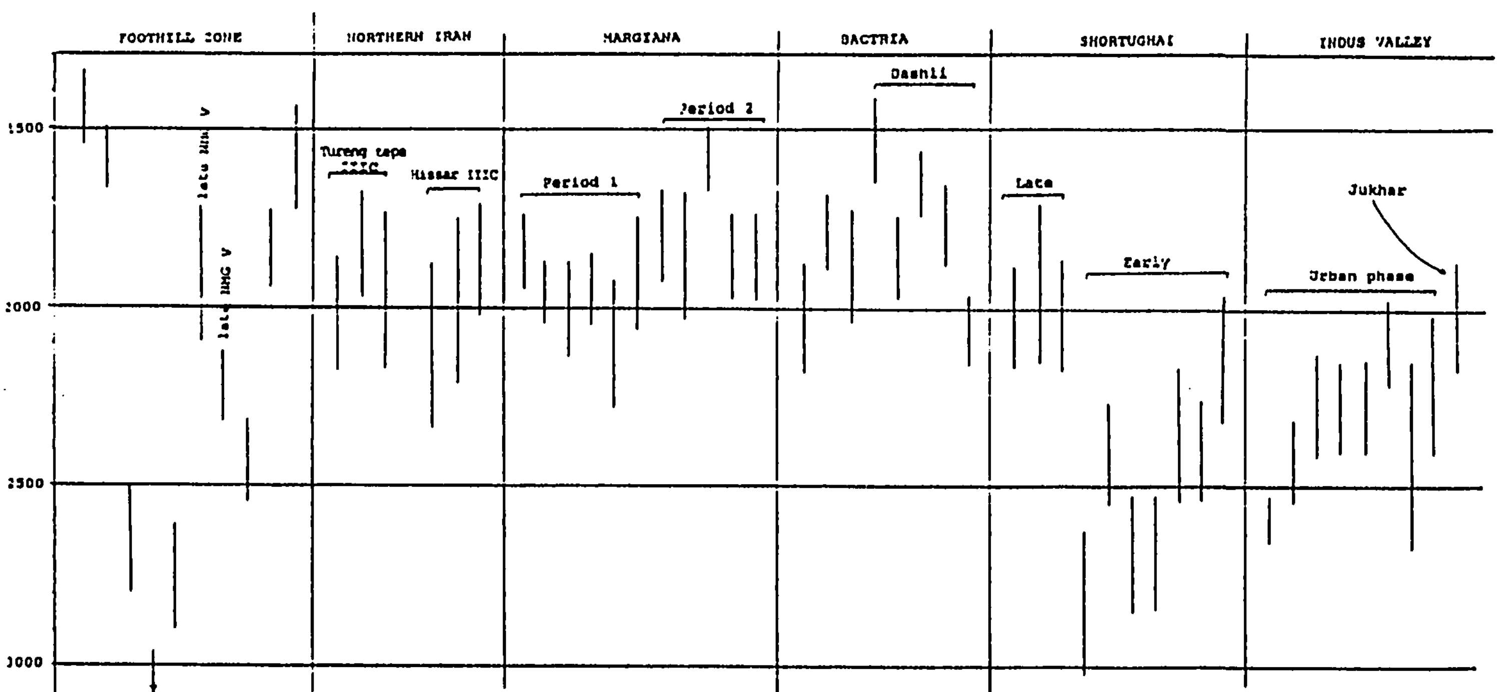


Figure 5.5. Radiocarbon dates from Central Asia, the Iranian plateau and South Asia which relate to Margiana.

The foothill zone

Radiocarbon dates from the foothill zone for the Namazga V and Namazga VI periods have been included here from the sites of Altyn depe and Ulug depe.

A series of seven dates from Altyn depe are from contexts associated with Namazga V ceramics (Masson 1970). Five samples are from early NMG V context- Altyn Level 3. The dates from Altyn do not show any clustering and cannot be used as a secure basis for dating the Namazga V of the foothill zone.

Three radiocarbon dates from the upper levels at Ulug depe are associated with the mid Namazga V, late Namazga V, and Namazga VI occupational levels. When calibrated, these dates match well the dates from sites with related materials on the Iranian plateau. The Namazga VI date corresponds to the NMG VI radiocarbon dates from Namazga depe (Dolukhanov, Schetenko, and Tosi 1985) which are generally later than the Margiana dates for Period 1 or Period 2.

	Uncalibrated	Calibrated	Calib range
Altyn depe, exc 7 Namazga V (early) LE 767	3140+/-60	1424 BC	1555-1365 BC
Altyn depe, exc 7 Namazga V (early) LE 769	3260+/-60	1523 BC	1685-1510 BC
Altyn depe, exc 7 Namazga V (early) BLN 717	4025+/-100	2533 BC	2800-2520 BC

Altyn depe, exc 5, Room 29
Namazga V (early)...........4660+/-50...3480 BC...3545-3360 BC
LE 770

Altyn depe
Namazga V (early)...........4120+/-100..2684 BC...2900-2615 BC
BLN 716

Altyn depe
Namazga V (late)............3540+/-80...1888 BC...2115-1730 BC
LE 1097

Altyn depe
Namazga V (late)............3770+/-50...2151 BC...2335-2135 BC
LE 1048

Ulug depe
Namazga V...................3910+/-50...2459 BC...2545-2315 BC
LE 1098

Ulug depe
Namazga V...................3500+/-50...1824 BC...1960-1725 BC
LE 1096

Ulug depe, exc 2, upper level
Namazga VI..................3280+/-95...1570 BC...1720-1430 BC
LE 980

Iranian plateau

BMAC related artifacts, or actual imports from Central Asia are found throughout the Iranian plateau and have been used to cross date the Central Asia material. Greyware ceramics similar to those from the upper levels of Tureng tepe have been found in Margiana and Bactria (Sarianidi 1990) in Period 1. Margiana Period 2 (BMAC) type artifacts have been found both at Tureng tepe and at Hissar IIIC. These artifacts are generally found in burials and in caches of artifacts called 'hoards' which are similar to the cenotaphs of Period 2 in Margiana and Bactria. Radiocarbon

data from both Tureng tepe IIIC2 and Hissar IIIC cluster in the early second millennium. They form a coherent group of dates associated with the BMAC which reconfirms an early second millennium date for this complex.

	Uncalibrated	Calibrated	Calib range
Tepe Hissar, main mound, upper strata Hissar IIIC P 2620	3610+/-70	1973 BC	2170-1865 BC
Tepe Hissar, Treasure Hill below top two building levels Hissar IIIC TUNC 20	3480+/-60	1813 BC	1975-1685 BC
Tureng tepe Period IIIC2 LY 1147	3580+/-130	1936 BC	2180-1730 BC
Tureng tepe Period IIIC LY 2302	3690+/-130	2174 BC	2335-1885 BC
Tureng tepe Period IIIC LY 2301	3620+/-130	2008 BC	2205-1765 BC
Tureng tepe Period IIIC TUNC 42	3520+/-70	1521 BC	2015-1710 BC

Northern and southern Bactria

Unlike the foothill zone, the desert oases of northern and southern Bactria have provided radiocarbon dates which cluster coherently. When calibrated, the radiocarbon dates from Bactria fit well with the radiocarbon dates for parallel materials from Margiana. Unfortunately the size and exact provenience of the samples is unknown. It is important to note, however, that these dates have been used

to suggest an absolute chronology almost 500 years later than what the calibrated dates indicate (Sarianidi 1977). Two radiocarbon dates were analyzed from Sapalli depe, which includes BMAC materials (Askarov 1977). These together with the dates from the southern Bactrian sites of Dashli 1,2,3 (Sarianidi 1977), when calibrated, generally fall into the first half of the second millennium BC. Most of the radiocarbon samples are from architectural contexts, while one is associated with the ceramic corpus from a tomb. These dates support rather than contradict an early second/late third millennium date for the Bactria-Margiana Archaeological Complex.

	Uncalibrated	Calibrated	Calib range
Sapalli depe BMAC Period LE 916	3640+/-90	2032 BC	2190-1880 BC
Sapalli depe BMAC Period LE 1078	3450+/-50	1749 BC	1890-1690 BC
Dashli 1, Room 18 BMAC Period? LE 976	3200+/-45	1475 BC	1655-1405 BC
Dashli 1, Room 24 BMAC Period? LE 975	3520+/-45	1883 BC	1975-1750 BC
Dashli 2, pit BMAC Period? LE 977	3340+/-40	1643 BC	1750-1575 BC
Dashli 3, burial BMAC Period LE 978	3440+/-50	1746 BC	1890-1685 BC
Dashli 3, 'palace' BMAC Period LE 1252	3670+/-50	2086 BC	2185-1950 BC

Eastern Bactria: Shortughai

Periodization problems have plagued the excavators at Shortughai because the site had complex stratigraphy and was extensively pitted. Divisions of the site into four discrete time periods (Desse 1989) are unmerited. Two periods (1/2 and 3/4) are defined on the basis of both the stratigraphy and the materials recovered (Francfort 1989).

Period 1/2 at Shortughai is well known for its Harappan connections which grant it the title of the northernmost Harappan site of the vast South Asian network of sites of the Bronze Age (Francfort 1984). The radiocarbon dates from Period 1/2 come from Butte A (Rooms 1, 2 and 3). Butte A was a habitation deposit with many pits and later intrusive holes. Several of the radiocarbon samples which came from pits (NY 429, MC 1727 in particular) deviate strongly from the dates of the other samples. If the dates from pits are discounted, the midpoints of the samples for Period 1/2 fall between 2600-2200 BC. They do not form separate Period 1 and Period 2 clusters, nor are Period 2 dates, as a group, later than Period 1 dates.

On the basis of the small finds, parallels, and ceramics from the Indus valley, Francfort argues that Shortughai Period 1/2 is contemporary with late mature Harappan, dated to c. 2200-1700 BC, while Jarrige suggests that an earlier 2500-2200 BC range is more appropriate. The radiocarbon dates support Jarrige's view.

All of the Period 3/4 architecture was excavated on Butte B. Period 3/4 has ceramic and small find parallels with the BMAC (Period 2 in Margiana) (Francfort 1981). Several radiocarbon dates from indeterminable contexts on Butte B are unusually young and a sample from a pit (MC 1728) is aberrantly old. The radiocarbon samples from good context (MC 1729, NY 421, MC 1730) cluster at the beginning of the second millennium, similar to the dates of the parallel materials from Margiana.

The absolute chronology of Shortughai is a key to understanding the chronology of Indus Valley-Central Asian interaction: The Harappan 'outpost' of Shortughai 1/2, predates the desert oases of northern and southern Bactria and Margiana. Indus type artifacts are found in early/mid Namazga V levels at Altyn depe, but none have so far been found in the Period 1 levels in Margiana. By Period 3/4, Shortughai no longer has Harappan type archaeological materials, but has artifacts and ceramics similar to Margiana Period 2 and the BMAC small finds. It may be that there is no occupational continuity at Shortughai from Period 1/2 to Period 3/4. The site of Shortughai was strategically located so that it would have been an obvious place to reoccupy if it had been abandoned at the end of Period 1/2.

Early Period

Uncalibrated Calibrated Calib range

Shortughai, Butte A
Room P1, C59, just above virgin soil
Period 1....................3725+/-80...2139 BC...2330-1975 BC
MC 2447

Shortughai, Butte A
Level 6, Room P1
Period 1....................3890+/-80...2416 BC...2555-2285 BC
MC 2446

Shortughai, Butte A
Room P2, beneath Floor 9
Period 1....................3875+/-95...2395 BC...2550-2185 BC
MC 1726

Shortughai, Butte A
Room P2, Hearth 2 on Floor 9
Period 1 or 2...............4040+/-100..2580 BC...2865-2525 BC
NY 425

Shortughai, Butte A
Room P2, Floor 8 (AI)
Period 1....................4075+/-95...2649 BC...2835-2535 BC
NY 430

Shortughai, Butte A
Level 3, Room 1
Period 2....................3890+/-80...2416 BC...2555-2285 BC
MC 2445

Shortughai, Butte A
Room 2-3, Floor 6
Period 2....................4190+/-125..2780 BC...3025-2636 BC
NY 428

Late Period

Shortughai, Butte B
Level 3, beneath Room 17
Period 3....................3620+/-105..2002 BC...2180-1870 BC
MC 1729

Shortughai, Butte B
Level 4, Room 14
Period 4....................3535+/-165..1887 BC...2155-1695 BC
NY 421

Shortughai, Butte B
Level 1, Hearth #2 P5
Period 4....................3640+/-95...2032 BC...2190-1880 BC

Dates not used

Shortughai, Butte A
Room 3, beneath floor 23 area
heavily pitted out, context unclear
Period 1?..................3570+/-95...1923 BC...2145-1760 BC
MC 1727

Shortughai, Butte A
"Hearth", from a pit (T31)
cutting through Wall M30
Period 2?..................4375+/-160..2957 BC...3365-2895 BC
NY 429

Shortughai, Butte A
"Hearth", from a pit (T2)
area heavily pitted
Period 2?..................3710+/-100..2652 BC...2320-1955 BC
NY 427

Shortughai, Butte B
Level'4' Pit 1
Period 3?..................3975+/-90...2549 BC...2660-2385 BC
MC 1728

Shortughai, Butte B
Level 3, context unclear
Period 3?..................3180+/-335..1445 BC...1705-1245 BC
NY 424

Shortughai, Butte B
Level 2, context unclear
Period 3?..................3050+/-250..1346 BC...1585-1040 BC
NY 422

South Asia

Shortughai Period 1/2 is contemporary with the "urban" or "mature" Harappan phase, based upon a cluster of six dates from Mohenjo-Daro as well as two dates from Harappa (Possehl 1989). Many more dates from the new excavations at Harappa confirm this dating (Meadow, pers comm). The BMAC is not contemporary with the urban phase, despite the

identification of several isolated BMAC type artifacts in the Indus valley. For example, a stepped diamond shaped steatite amulet bearing the image of an eagle on it has been commonly illustrated as an Indus valley object (Childe 1952); however, this object is typical of the BMAC and comes from the uppermost level at Harappa, most likely from Late Harappan levels. There are many stylistic parallels between small finds from the Jhukhar (Late Harappan) levels at Mohenjo daro (Marshall 1931) and at the site of Chanhu-Daro (Mackay 1943). The parallels may, in fact, be BMAC imports into the Indus valley. There is only a single Jhukhar Period radiocarbon date (from Mohenjo Daro- TF-75), which matches with the Central Asian area of Margiana and Bactria.

	Uncalibrated	Calibrated	Calib range
Mohenjo-daro mature or urban phase P 1177	3985+/-64	2546 BC	2650-2520 BC
Mohenjo-daro mature or urban phase P 1179	3913+/-64	2460 BC	2545-2315 BC
Mohenjo-daro mature or urban phase P 1180	3828+/-61	2297 BC	2415-2125 BC
Mohenjo-daro mature or urban phase P 1178A	3802+/-59	2231 BC	2405-2155 BC
Mohenjo-daro mature or urban phase P 1176	3801+/-59	2232 BC	2405-2155 BC
Mohenjo-daro mature or urban phase P 1182A	3702+/-63	2064 BC	2210-1975 BC

Harappa
mature or urban phase.......3920+/-210..2469 BC...2675-2155 BC
WIS 2053

Harappa
mature or urban phase.......3770+/-70...2203 BC...2405-2020 BC

Mohenjo-Daro
Late Harappan or
Jhukhar Period..............3600+/-110..1961 BC...2165-1860 BC
TF 75

Conclusions

The radiocarbon data from Margiana provide an excellent cluster of dates for the Bronze Age oasis occupation. The Margiana cluster of dates for Period 1 (2000 BC) and Period 2 (1800 BC) can be compared to other dates from Central Asia and to dates from related occupations on the Iranian plateau and in South Asia. Within the absolute range so established, a refined chronology must still rely upon style and forms of ceramics and small finds.

CHAPTER 6

THE EARLIEST ARCHITECTURE AT GONUR DEPE

This study of the architecture from Margiana is based upon fieldwork which I conducted in 1989 while participating on the excavations at Gonur. I used three approaches in evaluating the architecture at Gonur: 1) my own excavations of Bronze Age oasis domestic architecture; 2) observations and detailed descriptions of the monumental architecture on the north mound which had been dug from 1978-1981; and 3) participation in the on-going excavations of monumental architecture from the south mound.

Combining fine scale observations with wide scale exposure ameliorates the problem of depending on small scale exposure alone. Small areas of excavation often do not permit a secure evaluation of architectural contexts for the archaeological materials. My goal was to integrate fine-scale observation and excavation with the wide scale exposure, to maximize the information of both techniques. Future collaboration should allow us to study room contexts more carefully, associating the ceramic assemblage and small finds with individual architectural phases.

BRONZE AGE HOUSE

Fifty meters to the east of the 1989 deep sounding was an area where the ceramic scatter was dense and several isolated artifacts lay on the surface (Figure 6.1). A small test pit (Locus 44) in this area revealed architecture 30-35 cm below the surface, overlaying earlier stratified occupational debris. I excavated the upper architecture in an area of 13 x 17 m and conducted several soundings beneath the architecture.

The architecture in this excavation was composed of large rooms connected by courtyards and alleyways (Figure 6.2). Three rooms (1-3) form a single apartment or household, with an east-west running alleyway opening on to a courtyard. A series of rooms (4-9) appear to be part of a different domestic complex unconnected to the main apartment.

The excavation methods used here differed from the deep sounding in that separate locus numbers were given to units that could be room fill material from the floors, test probes, or separately excavated features. These locus numbers (36-55) follow sequentially those employed in the deep sounding.

Phases are based upon architectural modifications such as rebuilt floors and walls. Bricks can be used as indicators of phase based upon size and form.

Materials from on and near the surface were

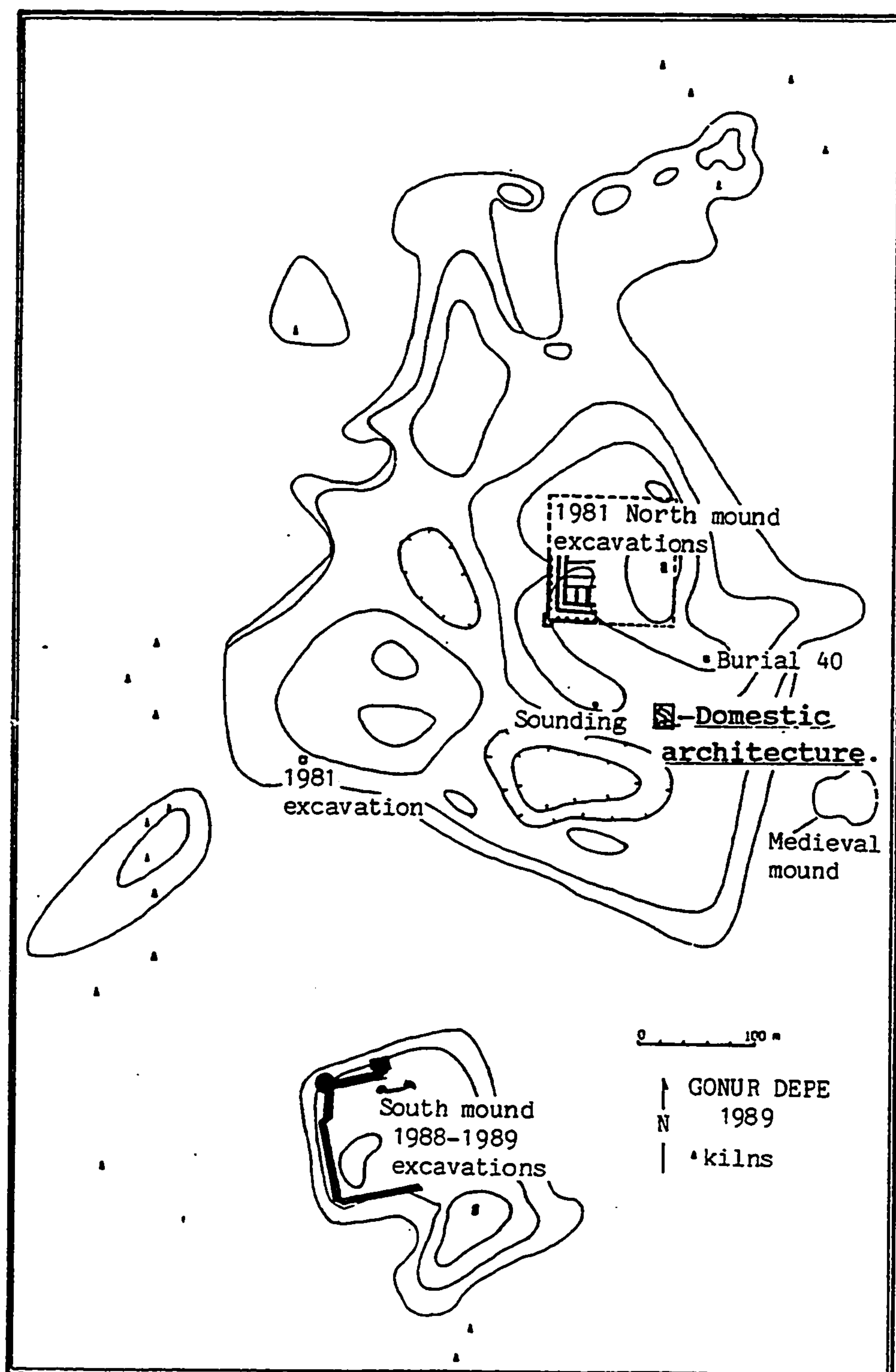


Figure 6.1: Gonur north: location of the 'domestic architecture' Excavations of Spring 1989.

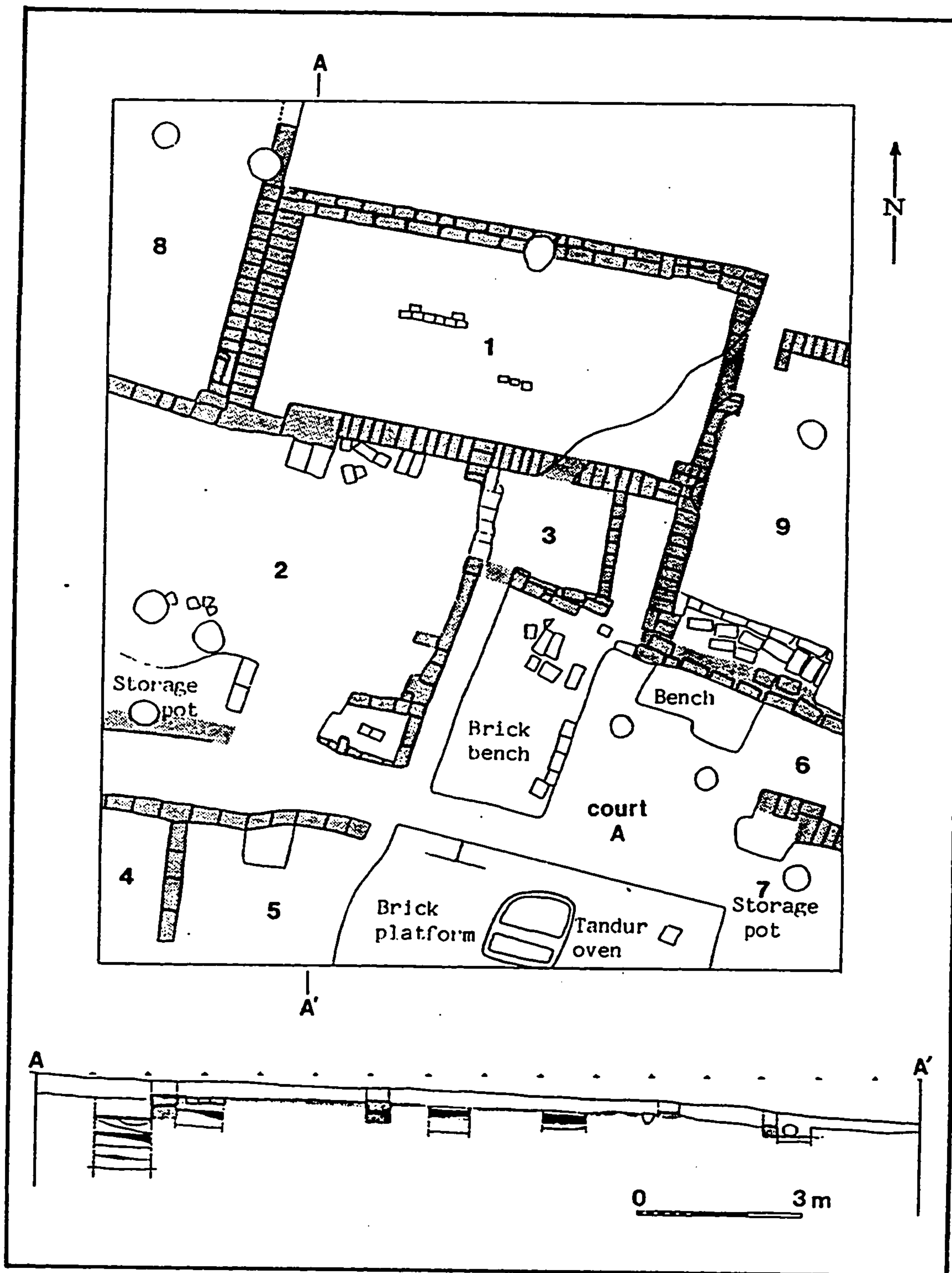


Figure 6.2: Domestic architecture. Shaded areas are wall foundations. Brick pattern indicates overall brick floor or platform.

systematically collected. The top 25-30 cm consisted of laminated hard thin sediments mixed with soft dusty deposit. This deposit, like the surface layer in the deep sounding, contains windblown artifacts layered in sand. It was removed down to a firm undisturbed deposit using a blade attached to a tractor. This intact surface was brushed thoroughly and the area was excavated by removing 15-20 cm of upper fill until such time as when wall lines became visible and rooms could be defined. The depth of deposit in the rooms was between 15 and 35 cm deep above the floor and below the preserved tops of the walls. This indicates heavy deflation over time in the area, which is a phenomenon typical of Bronze Age Margiana sites with architecture.

Rooms 1 and 2 of the main apartment had two floors. The upper floor was entirely excavated, but the lower floor was exposed only in 'sub-floor' soundings (Figure 6.3). Loci 48, 45, 56, and 47 are sub-floor tests which span the north-south section of the excavation in the apartment (Section A, Figures 6.2 and 6.4). A second set of below floor tests (Loci 44, 52, and 63) span the north-south section outside of the main apartment (Section B, Figure 6.5). These tests show that the whole complex was built upon sloping midden with the walls following the slope of the mound. The mudbricks were generally of standard size (20 x 45 x 15 cm) with a 1-3 cm of light brown mud mortar between them.

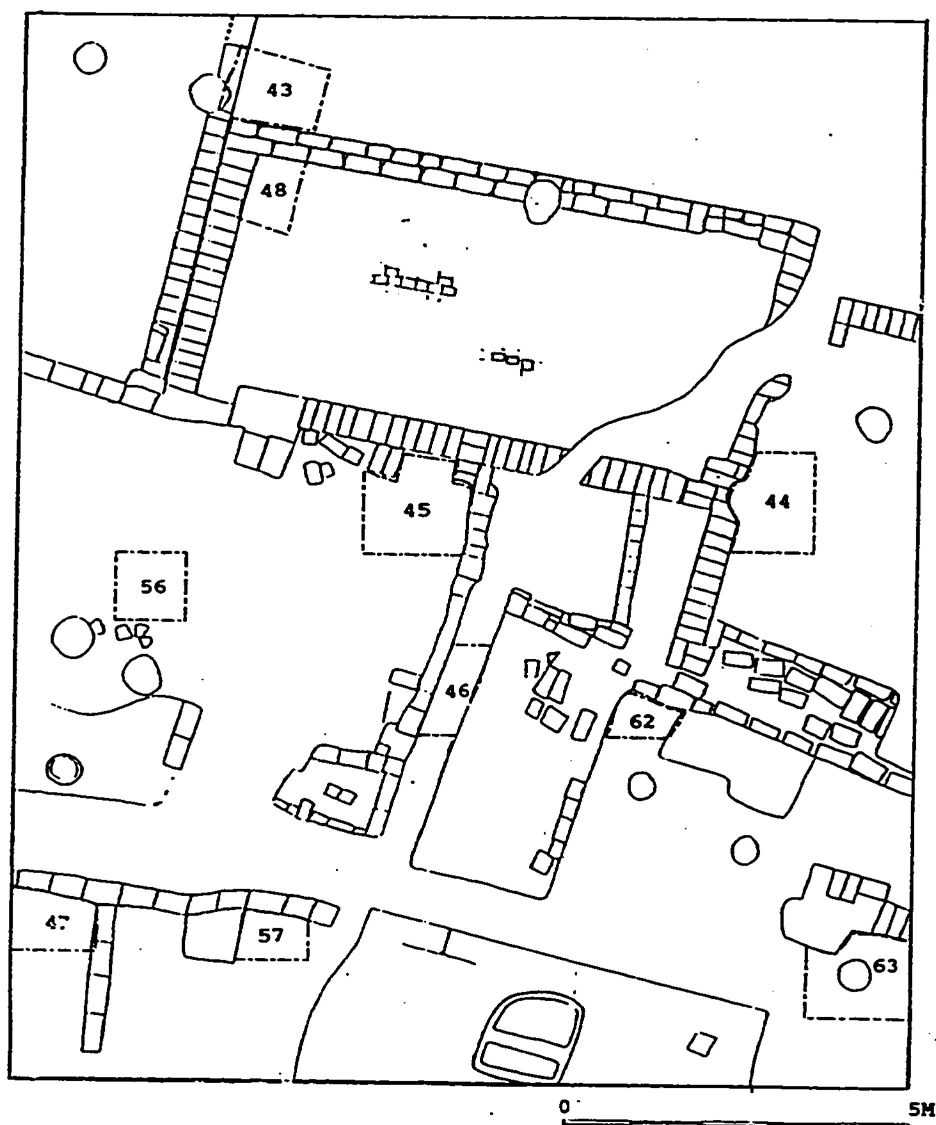


Figure 6.3: Location of soundings beneath floors of the architecture (numbered by Locus unit)

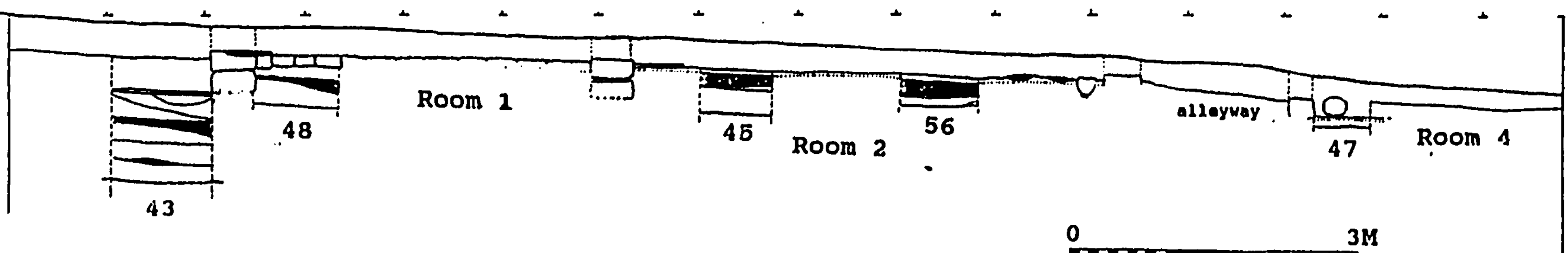


Figure 6.4: Cross-section of excavations through Main apartment (Rooms 1-2), alleyway and Room 5.

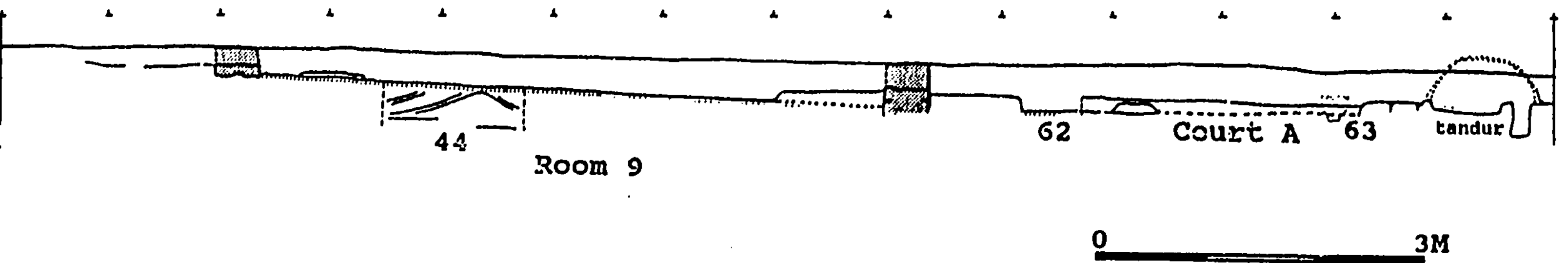
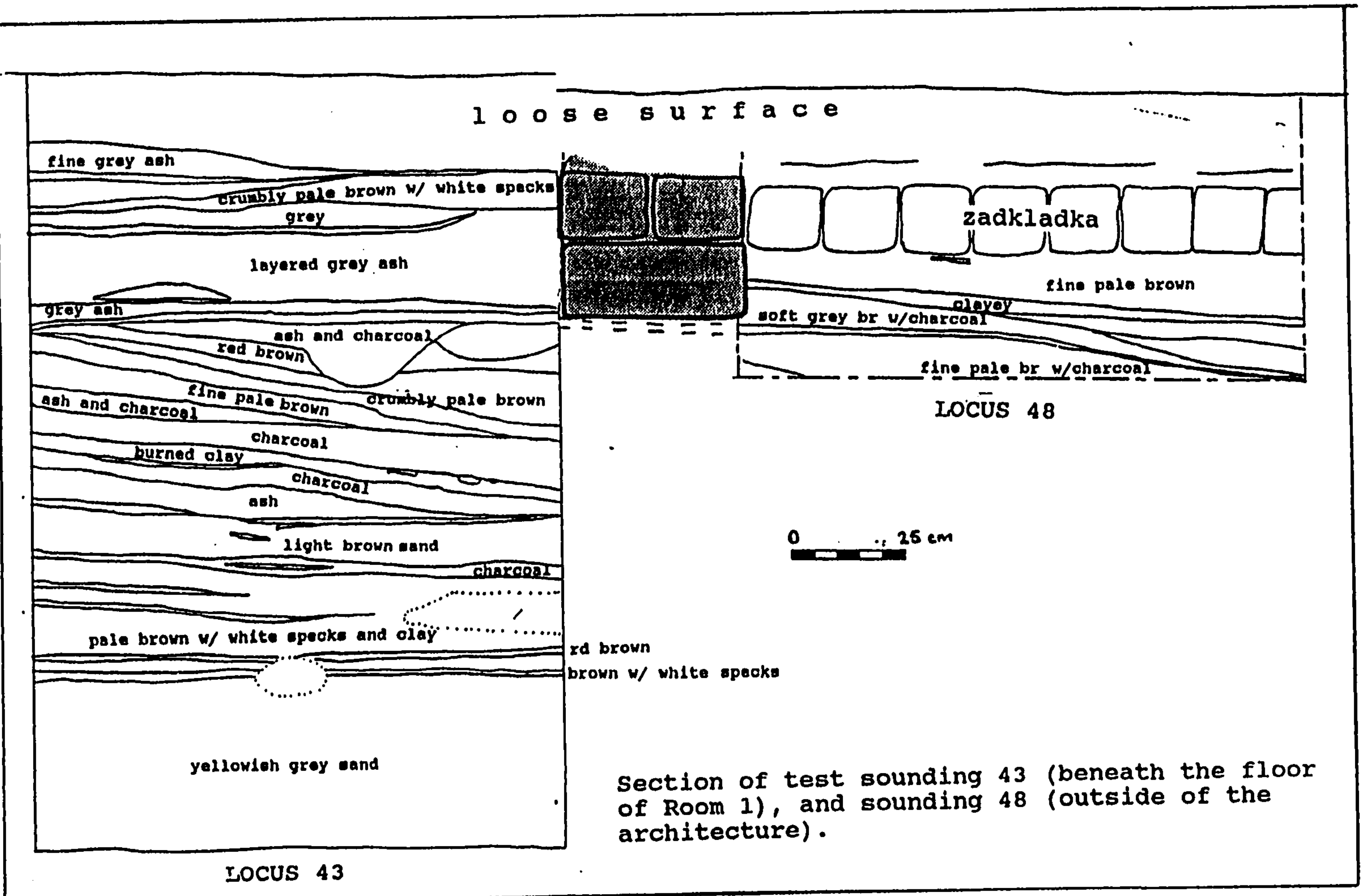


Figure 6.5: Cross-section of excavations through courtyard and Room 9.

Room 1

The central room of the main apartment, Room 1, measures 7.75 by 3.30 m (25.6 sq meters). This room has several features which set it apart from the other rooms. Most importantly, it has a brick floor, with 14 x 14 x 20 cm brick pieces (half bricks) separated by wide (3-4 cm) bands of mortar (section of Locus 48: Figure 6.6). The brick floor is a zakladka, previously found only in the monumental architecture at Togolok 21 and Togolok 1 where it is brick fill above an existing floor. In the Togolok buildings, zakladka (Russian for 'filling') apparently were not used as flooring but as fill to seal off a room. Here, it was clearly used as a floor, since ceramics were in place upon it and there was a burned area around the hearth in the north wall.

The hearth in Room 1 was 55 cm in diameter and partially built into the wall. It was preserved only at floor level, but is similar to the type of wall hearths better preserved in Bactria at Dashli-1 (Sarianidi 1977:photograph p.32), Sapalli (Askarov 1977), Kelleli 4 Room 30 (Masimov 1984:16), and at Tepe Yahya (Trench B, Room B/C, Period IVA) in Iran (Lamberg-Karlovsky, in press). An erosional feature runs through the southeast corner of Room 1, but the entire floor of the room was originally bricked. The four walls of Room 1 were each 40 cm thick; the bricks were laid using the header and stretcher construction technique. In contrast,



Section of test sounding 43 (beneath the floor of Room 1), and sounding 48 (outside of the architecture).

Figure 6.6:

the walls of Rooms and 3 are only one brick thick (20-40 cm).

Room 1 is connected to Room 2 by a raised mudbrick doorsill formed by a narrow series of mudbricks across the doorway. Many rooms at Togolok 21, Togolok 1, and Kelleli 3 & 4 have raised doorsills rather than openings flush with the floor. Raised doorsills are still seen in the traditional mudbrick architecture of Central Asia where doorways lead to covered rooms (personal observations in the modern mudbrick architecture of the Murgab delta oasis). A small mud plaster threshold is in front of the doorsill in Room 2. Similar doorsills are found at Hissar in the Burned Room, including a compressed mud threshold leading into the room (Dyson and Remsen 1989:93). The relatively thick walls, the raised doorsill, the hearth built into the wall, and the brick floor all suggest that Room 1 was roofed.

A test beneath the floor of Room 1 (Locus 48) showed that the zakladka bricks were 18 cm deep and were irregularly broken off. The brick layer lay on soft greyish brown sediment and ash, containing sherds and charcoal. This soft deposit itself lay on a layer of very fine grey clay which was probably the original floor of the room. Sherds were found directly on this floor, which lapped up against the edge of the brick of the wall on the north. Along the west wall of Room 1, zakladka bricks were laid against a fire-reddened section of the wall. Beneath the grey clay

floor, we excavated another 15 cm. The base of the wall was found just below the grey floor, and this floor was laid upon the sloping soft greyish brown soil containing sherds and charcoal. This subfloor deposit is similar to the deposit found on the north side of the wall in Locus 43.

Room 2

Room 2 is a large Room, 5 meters by at least 7.5 meters. The open entrance has no threshold and leads to the alleyway. The east wall of room 2 is partially eroded by the gully, but appears to have originally been no more than 20-40 cm wide. In the southwest corner, the floor contained brick fragments in an irregular pattern. The rest of the floor in room 2 was made of tamped earth.

An upside down storage jar (khom), was found buried along the base of the south wall. The base of this jar had been broken off at floor level and was covered with a large sherd. Pots embedded in walls and under floors are found in many other areas at Gonur and at Togolok 21. This feature is typical of the architecture of Bronze Age Margiana. The upturned vessel with its base broken off may have been used for storage of dry materials. Its location under the floor at the base of the wall would have provided a cool and dry storage area.

Two shallow basins near the south wall were used as hearths. These hearths, 46 and 50 cm in diameter, were rich in charcoal, ash, and burned bone. Hearth 1 was

particularly rich in charcoal, and flotation samples were taken from this installation. Hearth 2 was full of burned bone of medium size mammals (sheep/goat), charcoal, and burned fragments of daub (Moore 1991a).

The large size of the room, the hearths on the floor, and the thinness of the walls suggest that this room was not roofed. The ceramics found in Rooms 1 and 2 consisted of large storage and processing vessels and large diameter thin walled vessels. Artifacts include a sherd of the lower part of a large open pot with an incised depiction of an animal, a handle from a handmade coarse "kitchen" ware vessel, and a small very smooth rubbing stone from the fill above Room 2 (finds from Room 1 and 2: Figure 6.7-8).

A 1 x 1 sub-floor sounding was excavated through the floor in Room 2 (Locus 56). The floor consisted of brick fragments in a tamped earth matrix, but unlike in Room 1 there was no discernable brick pattern in the floor. This floor was 3-5 cm thick and below it was a 15 cm thick layer of charcoal-rich and ashy soil which lay upon a floor or construction surface. Below this surface sloping soft deposits were again found (section below Room 2, Figure 6.9).

A second sub-floor sounding was made in the northeast corner of Room 2 (Locus 45). The upper floor near this wall was tamped earth without brick fragments. An earlier floor lay 15-20 cm below the upper floor and separated from it by

Figure 6.7 Finds from the floor of rooms 1 and 2

1. Locus 49, type 3.A.1 reddish buff , Med fine chaff.
2. Locus 49, type 3.A.1, red, Med fine chaff.
3. Locus 49, type 3.B.1, buff, Med fine chaff.
4. Locus 42, type 2.B.2, reddish buff, Med fine chaff.
5. Locus 37, type 3.A.1, red, Med fine chaff.
6. Locus 37, type 2.B.1, buff, red core, Med fine chaff.
7. Locus 37, type 2.A.1, buff, Med fine chaff.
8. Locus 58, type 1.B.3, red, buff int. and ext., Med fine chaff.

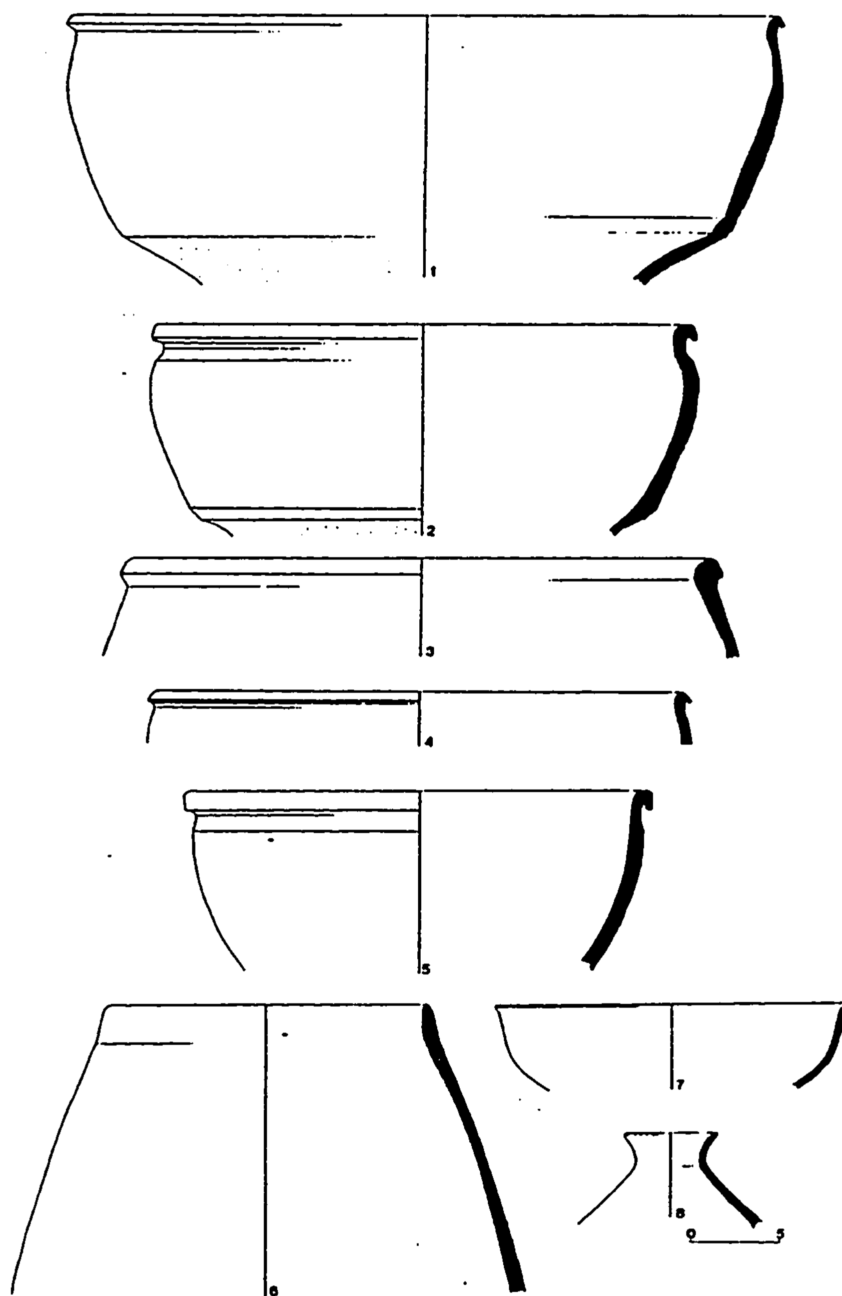


Figure 6.7: Finds from the floor of Rooms 1 and 2

Figure 6.8 Finds from the floor of rooms 1 and 2

1. Locus 58, type 3.B.2, reddish buff, Med fine chaff.
2. Locus 53, type 2.A, buff, Med fine chaff.
3. Locus 37, type 3.A.1.3, buff, med fine chaff.
4. Locus 37, type 2.A, buff, Med fine chaff.
5. Locus 37, type 2.A, buff, Med fine chaff.
6. Locus 37, handle, red, coarse grog temper, handmade.
7. Locus 37, Grey crystalline smoothing stone.

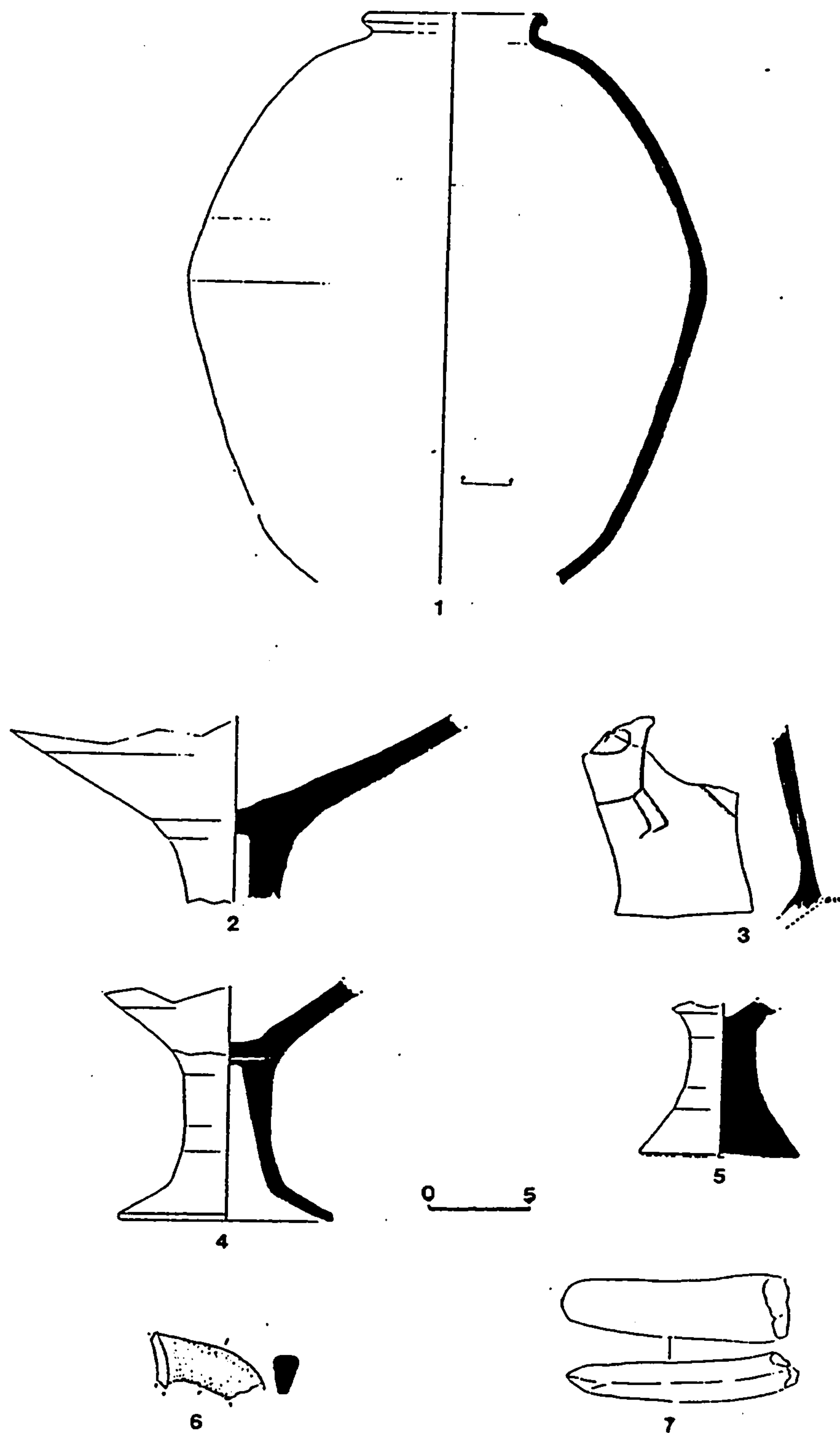
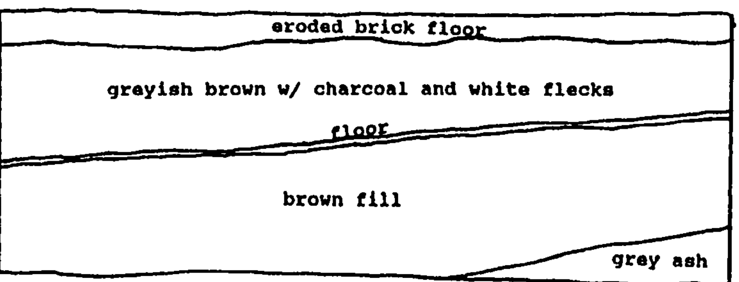


Figure 6.8: Finds from the floor of Rooms 1 and 2

East profile

<--North



0 20 cm

Gonur 89
north
Locus 56
Room 2

Figure 6.9: Section beneath floor of Room 2

dark charcoal-laden deposits. A radiocarbon sample was taken from the sealed context between the two floors (Beta 35125). The date of this sample (3630+-90 BP, 1994 BC Calib 2 calibrated), is close to the radiocarbon date from the lower levels of the deep sounding 50 meters to the north (see Chapter 5).

Room 3

The floor of Room 2 continued underneath a section of the east wall towards Room 3. The wall separating Room 3 from Room 2 was built as a later architectural addition.

Room 3 (1.5 x 2.0 meters) had a specially prepared floor made of firm yellowish brown clay with white plaster specks (Figure 6.10). Most of the ceramics lay on top of a thin layer of windblown sand which covered the original floor as if the sand had purposely been laid during the room's use. A slightly raised hearth (Hearth A, Figure 6.10) of tamped earth contained fragments of burned brick and burned grasses (no bone or charcoal).

The ceramics in Room 3 appear to have been in situ, having a functional relationship to each other. Several vessels were stacked one on another. A burned sherd disk (20 cm dia) had been used as a "griddle" and lay on a prepared base of coarse ware sherds which in turn lay on a soft black film of burned chaff and stems (Hearth B, Figure 6.10). Near this assemblage was a handmade grog tempered storage vessel (khom). Its form exactly duplicates the wheel made

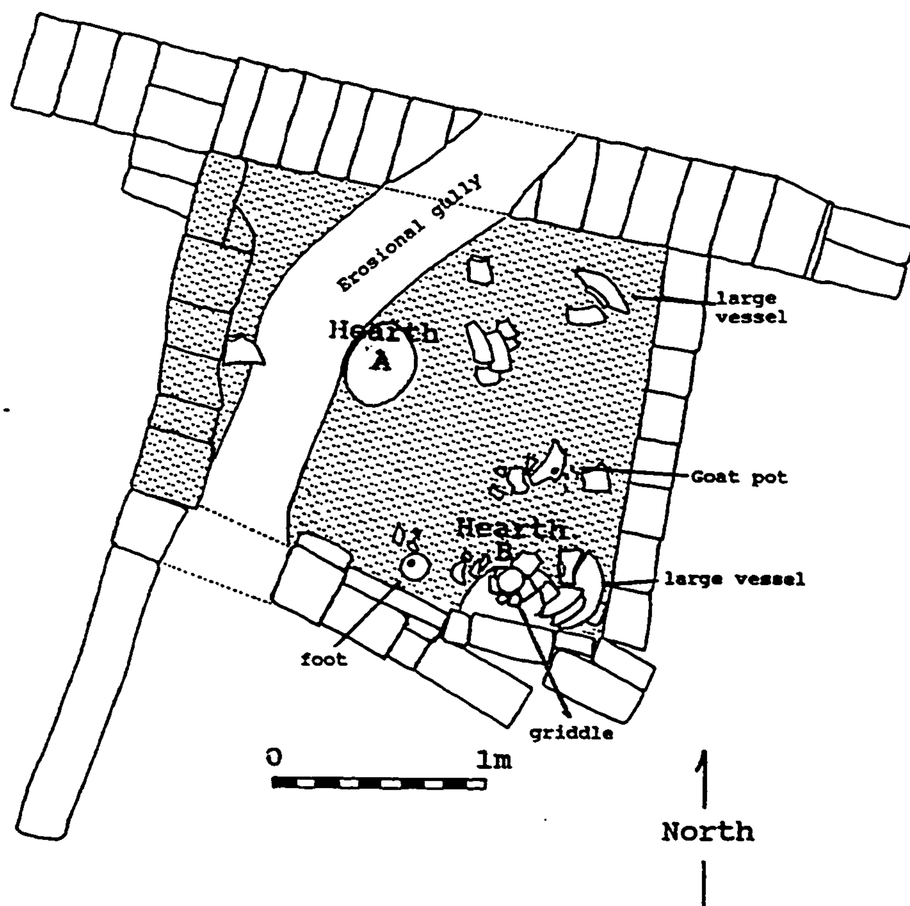


Figure 6.10: Room 3 of the domestic architecture, Gonur north (Locus 39)

wares, including the characteristic incurving base of the large wheelmade khomcha and khoms. There was also a cluster of ceramics which included a finely made foot for a tall footed vessel. On the north side of the room, a fragment of a grinding stone lay among another cluster of sherds (finds from Room 3: Figure 6.11).

In the corner to the east was part of a basin with a large oval spout similar to spouted vessels from Kelleli 3 (Masimov 1981:201,fig 4,8). Another large spouted basin was found on the floor. It had two sets of incised tree motifs on its side, with animal figures applied to each side of the tree as if they were climbing the tree. It is likely that there were originally four sets of motifs. These animal figures were hand modeled and then pressed into the side of the vessel after the tree had been incised.

It has been suggested that in traditional pre-Islamic Central Asia, each household had a shrine (Grenet 1987). This is a Zoroastrian tradition which is thought to have come from a pre-Zoroastrian Central Asian pattern (Boyce 1975). Room 3 could be interpreted as a early example of the Central Asian household shrine. The well-made floor of Room 3, the unusual hearth, and the distinctive ceramics set it apart from the other rooms of the domestic architecture. A similar area at Kelleli 4 (on a platform) is also considered to be a small shrine or ritual area. The occurrence of shrines at a household level would be consistent with the

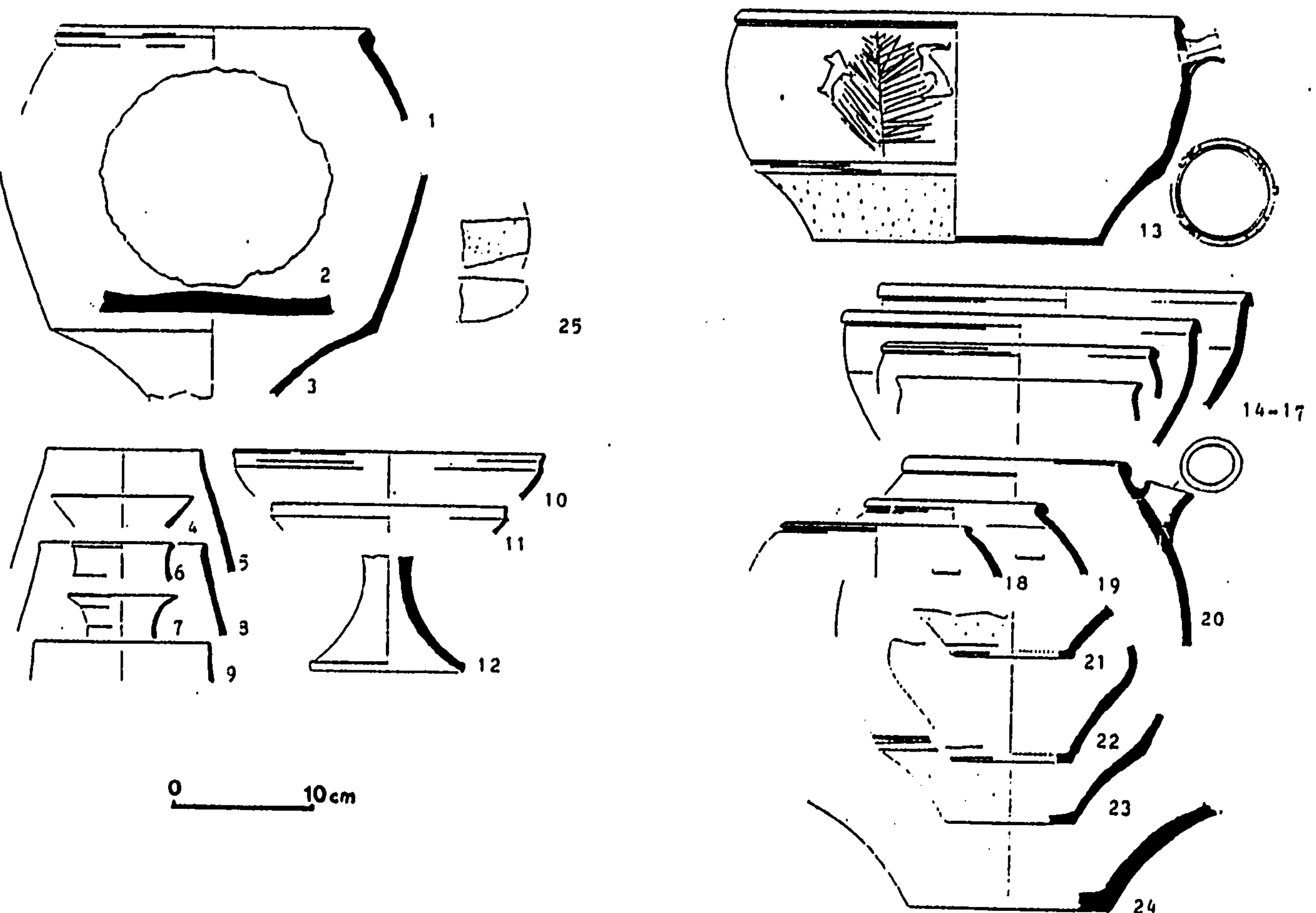


Figure 6.11: Finds from Room 3. 1-3 "kitchen" ware.
4-24 wheelmade ware 25 grinding stone fragment.

widespread discovery of ritual objects such as figurines at sites throughout Margiana, rather than clustered around 'temples'.

Other household shrines dating to the Bronze Age have been identified in neighboring regions. A similar room (no. 10) at Altyn depe Excavation 10 is thought to be a household shrine (Masimov 1973). The Burned Building at Hissar also has a 'household' shrine which may be compared to Gonur Room 3 in terms of construction and artifacts (Schmidt 1937:164; Dyson and Remsen 1989:96-7).

Court A

To the south of Room 2 leading to Court A is an alleyway with a sloping surface of compacted dirt, 1.10 meters wide. Court A has raised brick benches and a platform on three of its sides. Two circular hearths each about 45-50 cm diameter dot the reddened dirt surface of the courtyard.

Two benches on the northern part of Court A were preserved to 20 cm above the floor surface of the court and have brick fall from the nearby walls above them. The face of the benches was coated with mud plaster. Bricks laid end-to-end form the perimeter of the benches, while the center parts have irregularly laid bricks and brick fragments placed in a mud matrix. The west bench was cut off from the west wall by the erosional gully.

The brick platform on the south side of the excavation is cut on its west side by the erosional gully but was

originally about 6.5 meters wide. Like the other benches in the courtyard, this platform has a line of bricks running around it and a composite of brick fragments inside. The base of an oven with two chambers, one small and one large, was found on the surface of this platform (plan and elevation of the oven: Figure 6.12). Its plastered sides were burned, and it had a hard layer of grey ash at the bottom, similar to the ash found at the bottom of ceramic kilns. This two-chamber oven is similar to a communal tandur oven, still in use in Turkmenistan. In modern ovens, the deep chamber is the fire chamber and the shallow broad chamber is the chamber for cooking meat or bread. Similar ovens from the Bronze Age are found in the courtyard of Kelleli 4 (Masimov 1984, fig 1), Dashli 3 (Sarianidi 1977), Altyn depe (Excavations 9-10) (Masson 1981:Figure 12), Shortughai (Room P21, Period 3) (Francfort 1989:plate 8) and Susa (Gasche 1988).

The ceramics from Court A are similar to those from rooms 1 and 2 of the house and included a complete trumpet shaped vessel on the floor of the court next to the southern platform. A fragment of a vessel on legs made of the local ware provides a close parallel to similar legged vessels from Altyn depe Levels 0-2 (ceramics from Court A: Figure 6.13).

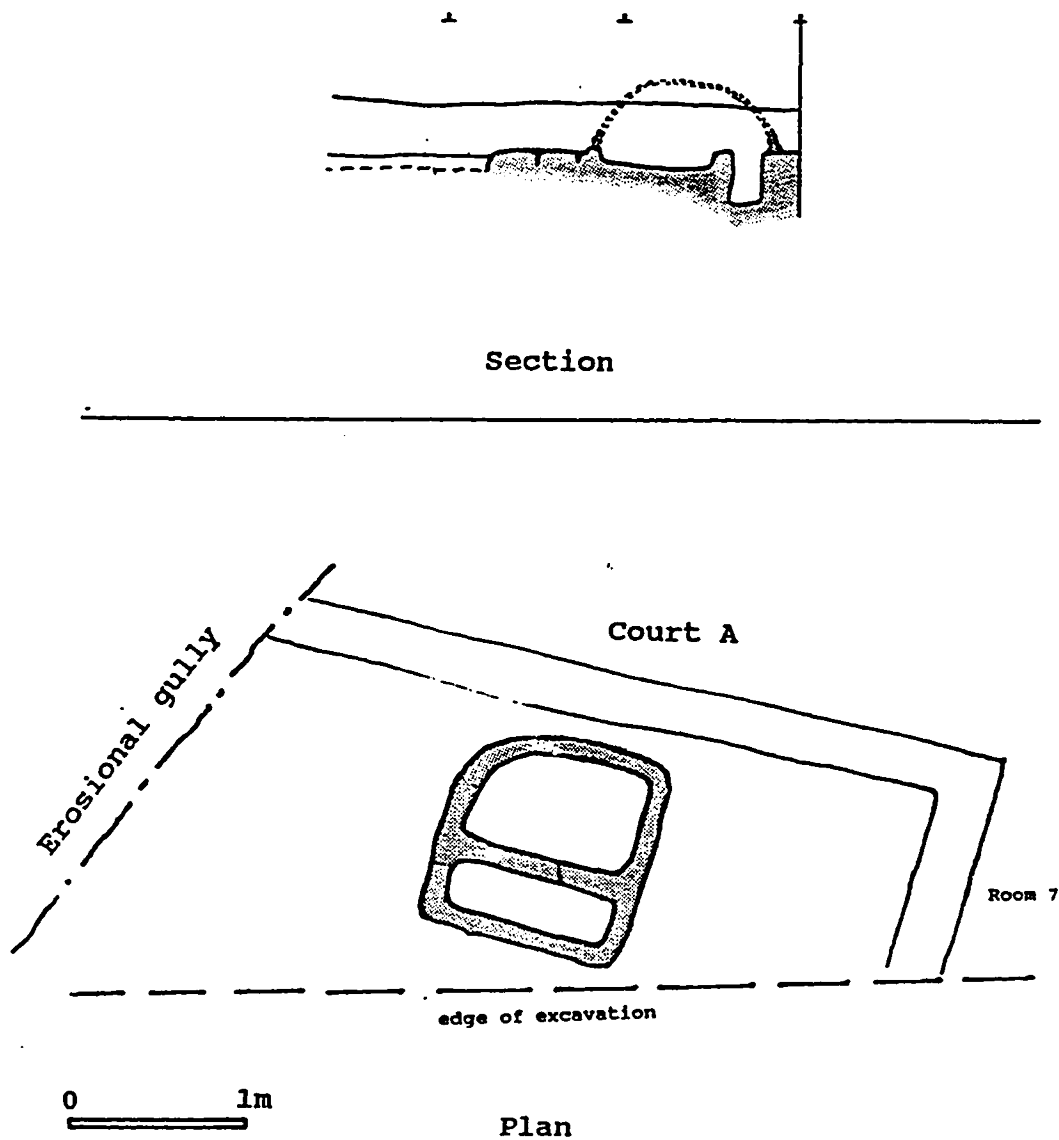


Figure 6.12: Plan and elevation of the 'tandur' oven, from courtyard A, domestic architecture, Gonur north. Spring 1989.

Figure 6.13 Ceramics from the floor of Courtyard A

1. Locus 41, type 3.B.2, red, Med fine chaff.
2. Locus 41, type 3.B.2, reddish buff, M f chaff.
3. Locus 42, type 3.B.2, misfire, red, grey core, M f chaff.
4. Locus 49, type 2.A.2, reddish buff, M f chaff.
5. Locus 50, type 2.A.2, buff rim, red base, M f chaff.
6. Locus 49, type 2.A.1, reddish buff, M f chaff.
7. Locus 49, type 2.A.1, red, M f chaff.
8. Locus 49, type 2.A.1, buff, M f chaff.
9. Locus 51, import, greyish buff, fine, shaved exterior.

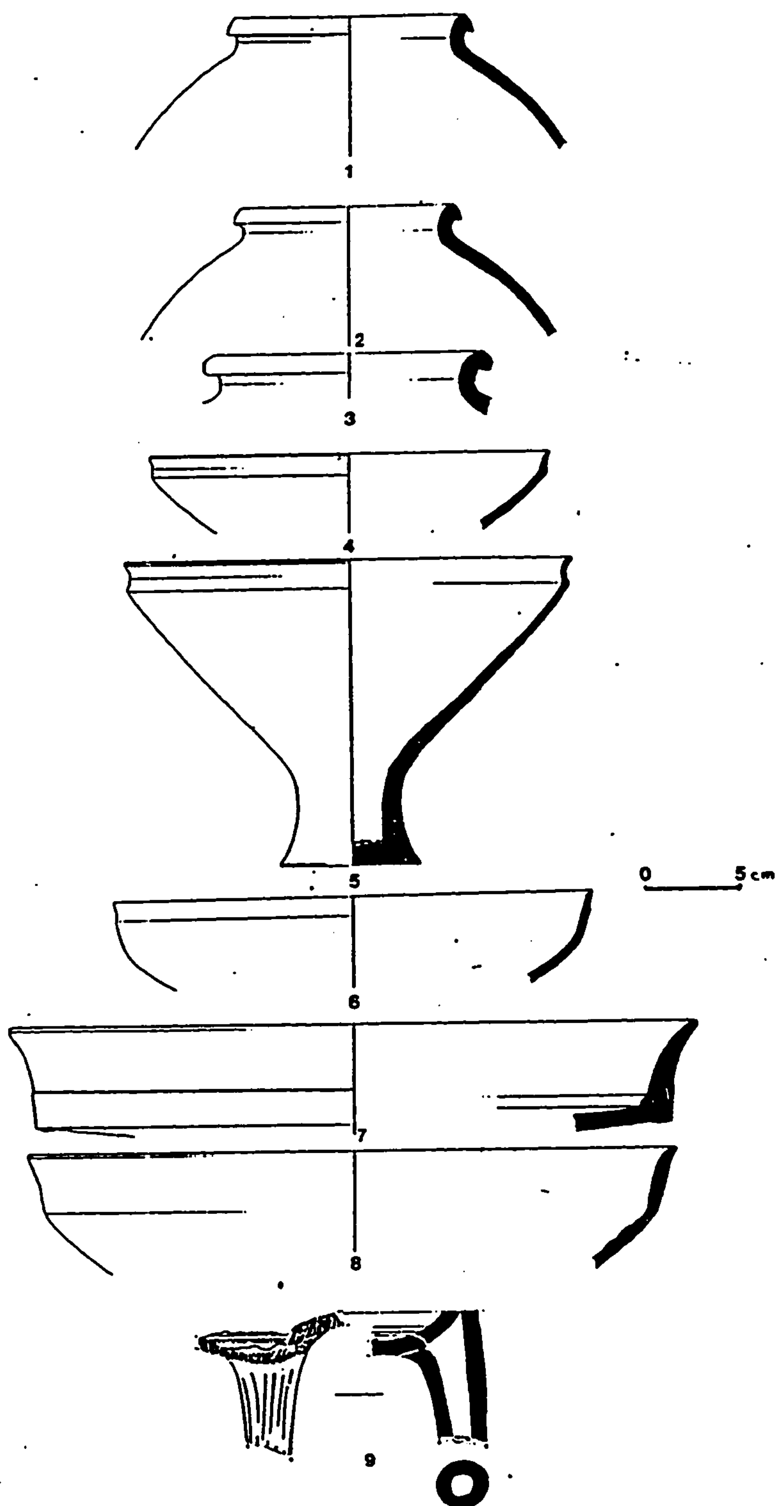


Figure 6.13: Ceramics from the floor of courtyard A, domestic architecture, Gonur north. Spring 1989.

SURROUNDING ROOMS

All of the rooms outside of Rooms 1,2 and 3 appear to be parts of other domestic units. If this "main apartment" was indeed one household, then the courtyard was probably shared by several households similar in structure. These houses were adjacent to each other, shared walls, and were connected by alleyways.

To the southeast of Court A was a room (Room 7) probably belonging to a different house separated by a continuation of the alleyway ('Room' 6). A large storage vessel was set in a depression 25 cm below the floor of Room 7. The circular depression in the floor provided a stable support for the small bases of the storage jars.

Rooms 4 and 5

Rooms 4 and 5 appear to have been large open rooms (similar to Room 2) or yards, which are set apart from the main apartment by an alleyway. A 1 x 1 m sounding in Room 4 (Locus 47), revealed a tamped mud floor or living surface 12-15 cm below the preserved top of the wall (stratigraphy of Room 4: Figure 6.14). The alleyway wall is only 20 cm thick at its base with the bricks laid end-to-end. Examples of well preserved walls of this thickness are found in Bronze Age architecture either as 'fences' for open areas or as interior walls.

A small mudbrick "work bench" 80 x 80 cm was excavated in Room 5. Ceramics and a piece of a grinding stone were

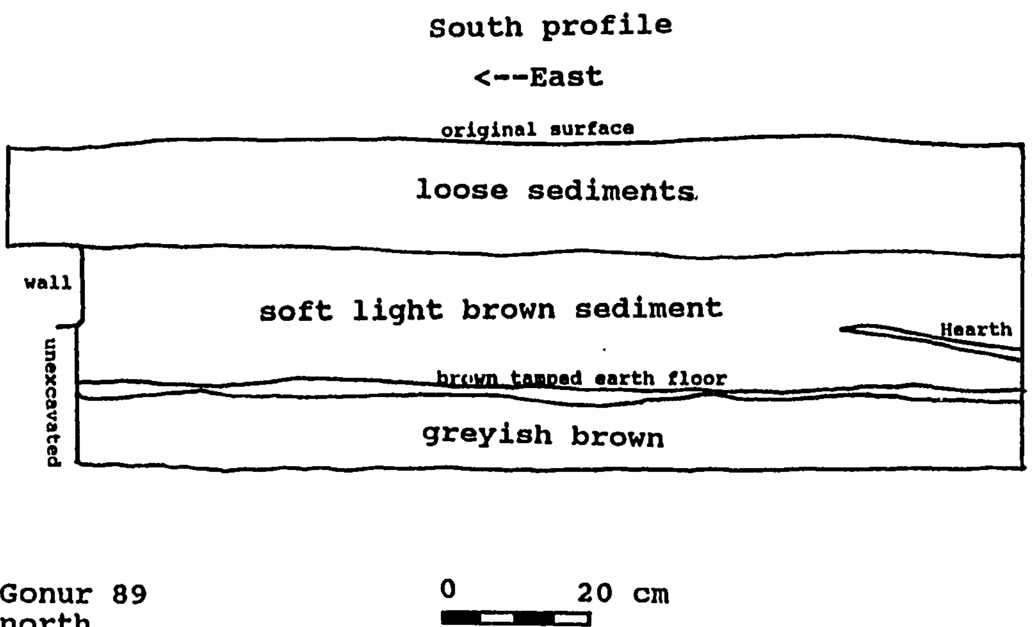


Figure 6.14: South profile of Locus 47: Stratigraphy of Room 4 (surrounding rooms) domestic architecture, Gonur north Spring 1989.

found on this platform (finds from the floors of the surrounding rooms: Figure 6.15). The gully cutting across the excavation eroded the wall between Room 5 and the bench in Court A.

Room 8

Room 8 shared its southern wall with Room 2 and its east wall was built up against the west wall of Room 1. It had a poorly preserved upper floor upon which a terracotta human figurine was found (Figure 6.15:6). Several centimeters below the upper floor was a very firm dirt floor, with two hearths. One hearth was built into the wall and probably had a chimney. This type of hearth may indicate that this room, like Room 1, was covered.

Room 9

Room 9 to the east of Room 1, has an open doorway to the north, apparently unconnected to the main apartment. The fill of the room contained finely stratified mudbrick collapse and ash, lying on greyish brown floor deposit. The floor was hard tamped earth with the remains of a hearth in a small depression. The floor was built upon sloping midden similar to that found in other sub-floor soundings and there was no other floor in this room (stratigraphy of Room 9: Figure 6.16). Room 9 has hearths in the middle of the room and an open entranceway similar to Room 2 of the "main"

Figure 6.15: Finds the floor of Rooms 5-9.

1. Grinding stone.
2. Ceramic (type 1.A.1) Local ware.
3. Fragment of a cylindrical rod, schist.
4. Ceramic (2.A.4 or 2.B base) Local ware.
5. White stone inlay, (marble?).
6. Terracotta figurine, applied eyes, incised sign on shoulder.
7. Ceramic (type 2.B.1) Local ware
8. Ceramic (type 3 base) Local ware.
9. Ceramic (type 2.A base) Local ware.
10. Ceramic, flat bottomed base, Local ware.
11. Ceramic, string cut base, Local ware.

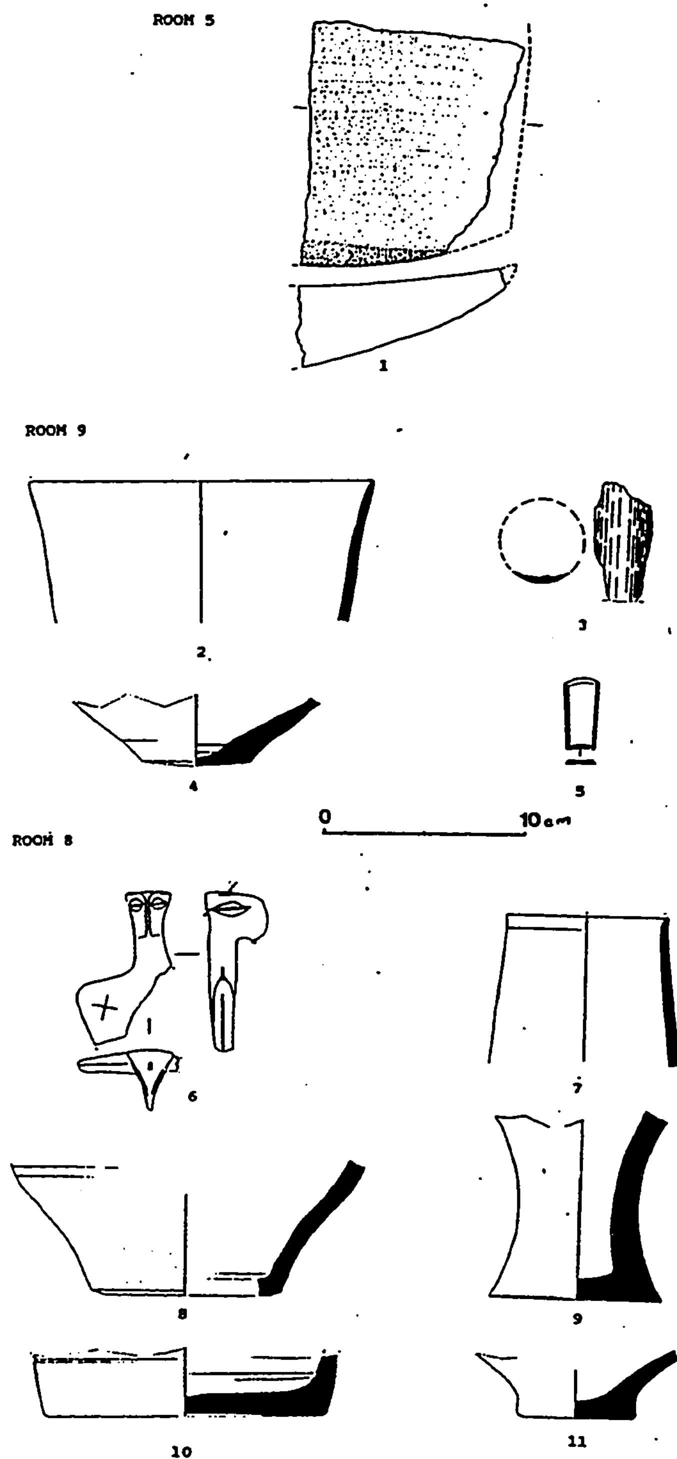


Figure 6.15 Finds from the floors of Rooms 5-9.

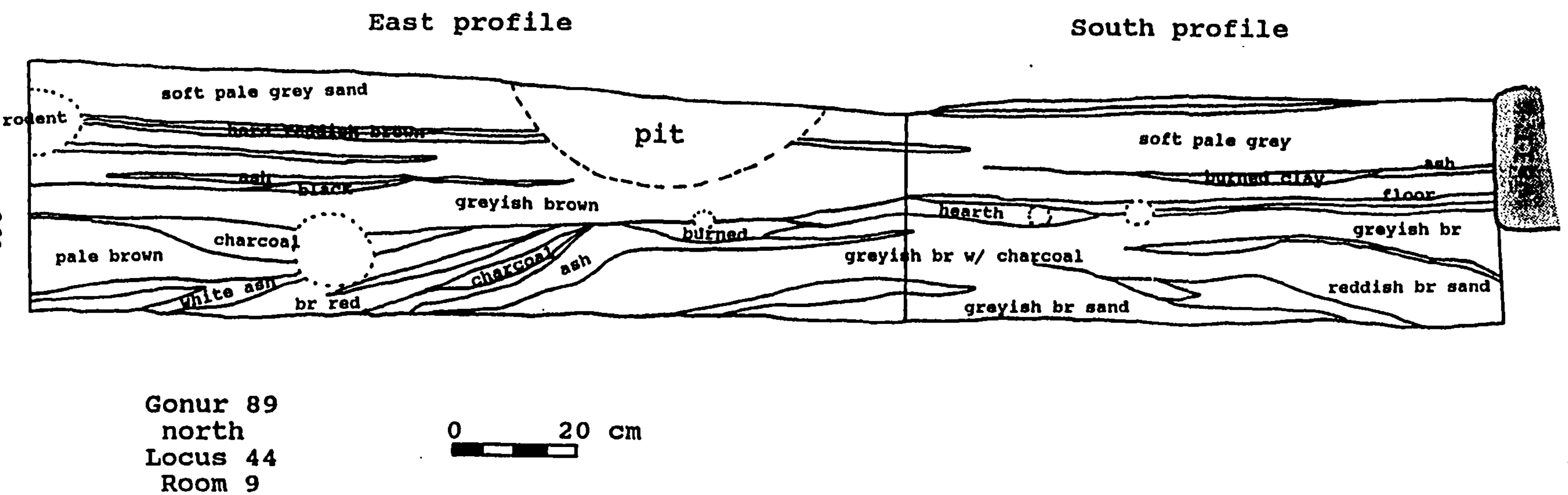


Figure 6.16: East and south profiles of Locus 44:
Stratigraphy of Room 9.

apartment. Along the southern wall of Room 9 was found the base of a bench with mud plaster on the northern edge.

Artifacts from Room 9 include ceramics, a single piece of stone inlay made of white limestone, and a fragment of a schist rod with an original diameter of 3-4 cm (Figure 6.15:3,5). These latter two fragments are from larger objects. Stone inlay has been found in 'elite' burials from Namazga V contexts at Altyn (Masson 1981) and Ulug depe (unpublished opisi), and the schist fragment is similar to stone staffs found in burials both of Namazga V and in BMAC burials, such as at Sibri. So far, no other examples of schist staffs have been found in Margiana.

CERAMICS

The ceramics from the domestic architecture are similar to those from Layers 1-4 of the deep sounding, fifty meters to the west. These types of ceramics form the first widespread horizon of ceramics in Margiana (Period 1) and represent the earliest period of Bronze Age occupation although not the first occupation. Here, as in the deep sounding, the Period 1 ceramics and small finds are found in several architectural levels.

Closed pots and jars and closed cylindrical basins (khomchi) were very common, comprising almost half of all of the identifiable rim sherds from the floors (Figure 6.17). Other common forms were the large storage vessels (khoms),

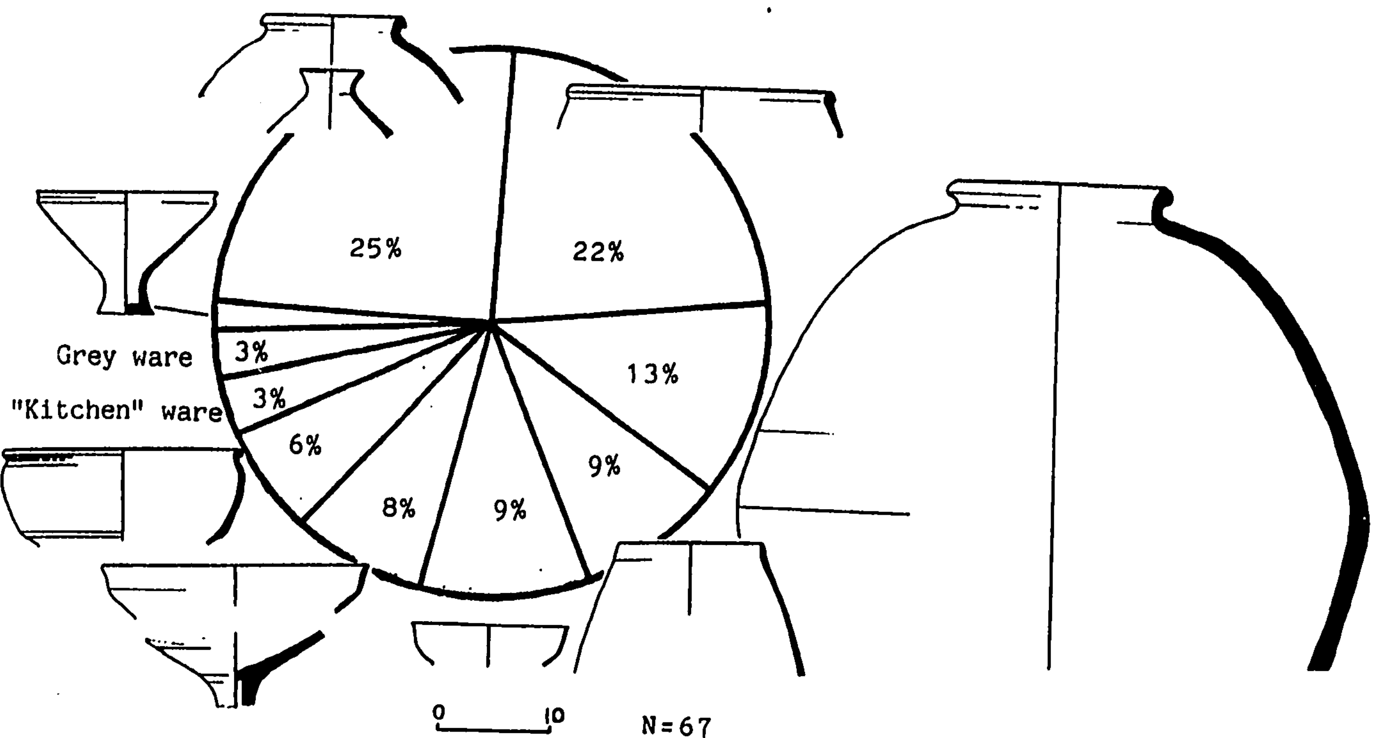


Figure 6.17: Ceramics from the floor of the domestic architecture, Gonur depe, north.

(including vessels buried under walls), biconical jars of various sizes, deep open bowls with simple rims, vases with a deep foot and a carination at the shoulder, and wide open basins with molded bases. In this domestic assemblage, open carinated-rim vessels were rare. Small fragments of greyware found in the upper fill of Rooms 1 and 2 are similar in ware and color to greyware from the Iranian plateau. The proportion of open (25%) versus closed vessels (75%) is typical of household assemblages in other areas of the world (R.Joyce, pers. com.). It is interesting to note that exotic small finds occur just as frequently in the domestic architecture as they do in the monumental architecture (described below).

STRATIGRAPHY BELOW ARCHITECTURE

Despite the early type of ceramic assemblage found in the rooms, it does not represent the first occupation in this area. A 1.2 x 1.1 m sounding to sterile sand was excavated to the north of Room 1 (Locus 43) and contained ceramics and associated occupational surfaces stratified beneath the domestic architecture (Figure 6.18). This area was outside of the building and contained no floor surface. The top 20-25 cm of deposit contained wall fall of broken bricks and laminated mud layers with ceramics scattered throughout it. These lay upon a compact brown and grey ashy

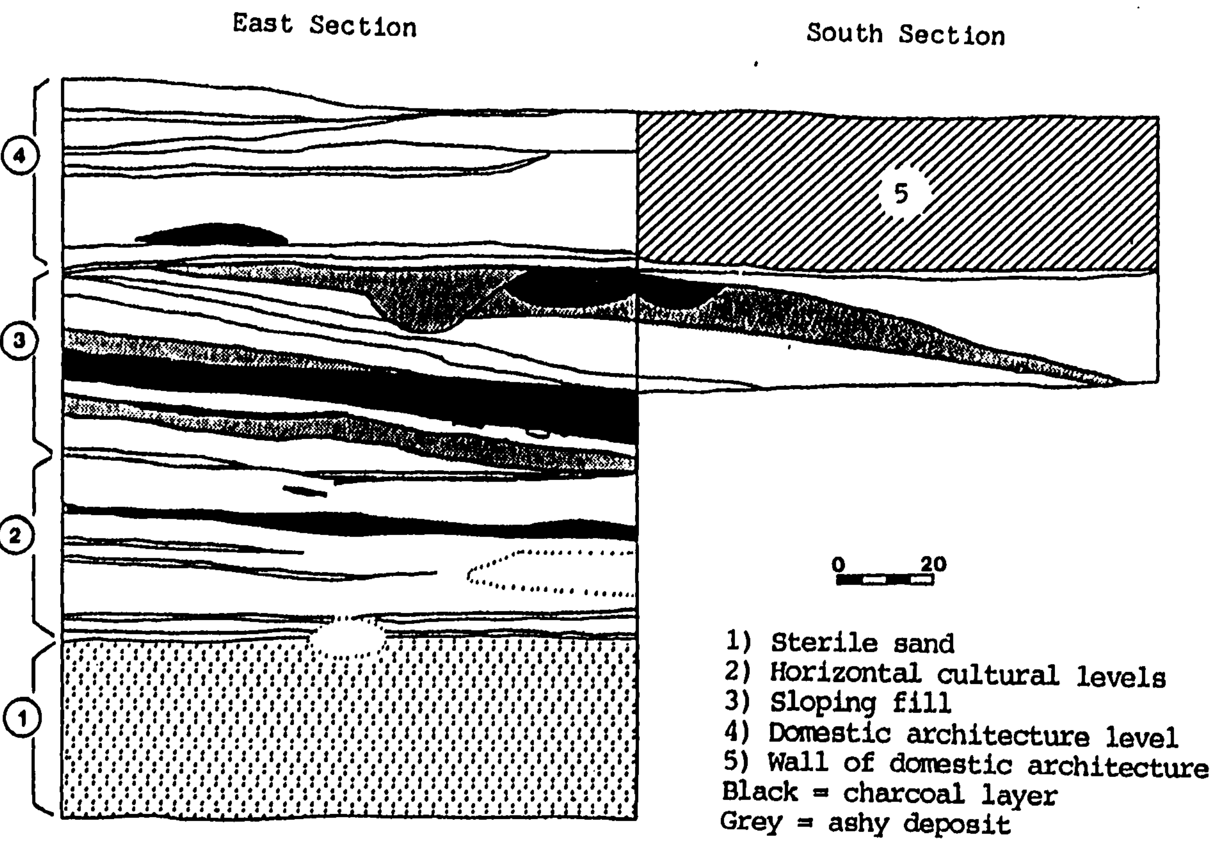


Figure 6.18: Sounding beneath the domestic architecture (Locus 43).

layer-- the ancient surface at the time of occupation of the apartment complex.

One meter of cultural material, in four stratigraphic layers, had built up before the architectural complex described here was constructed. These deposits lay on the natural mound that was composed of yellowish-grey sands (materik). The lowest 40 cm was light greyish brown soil with no cultural material. The second layer consisted of four horizontal hard grey clay surfaces with many sherds as well as a charcoal-rich hearth. Layer 3, above this, consisted of 25 cm of sloping ashy midden deposits with charcoal and ceramics. The fourth layer consisted of a separate level of sloping ashy midden. Deposits similar to this were found just beneath the architecture in all of the soundings.

Occupational levels were found on sterile soil in the deep sounding and in this small probe, giving the impression of widespread occupation directly on the original mound. The ceramics from this small sounding are indistinguishable in form or in ware from the ceramics from the architecture above (Figure 6.19). The domestic architecture could not have been built long after the initial occupation of the northern mound.

Figure 6.19 Ceramics from locus 43: lowest levels

1. type 2.A.2
2. type 2.A.2
3. type 2.A.1
4. type 3.A.1
5. type 3.B.1
6. type 3.B.2
7. type 3.B.3
8. type 3, moldmade base
9. vertical spout, local ware
10. type 2.A base
11. type 6
12. type 1.B.3
13. type 2.A base
14. type 2 wheelmade base
15. type 2 wheelmade base
16. type 2 wheelmade base
17. type 3 moldmade base
18. type 3 moldmade base

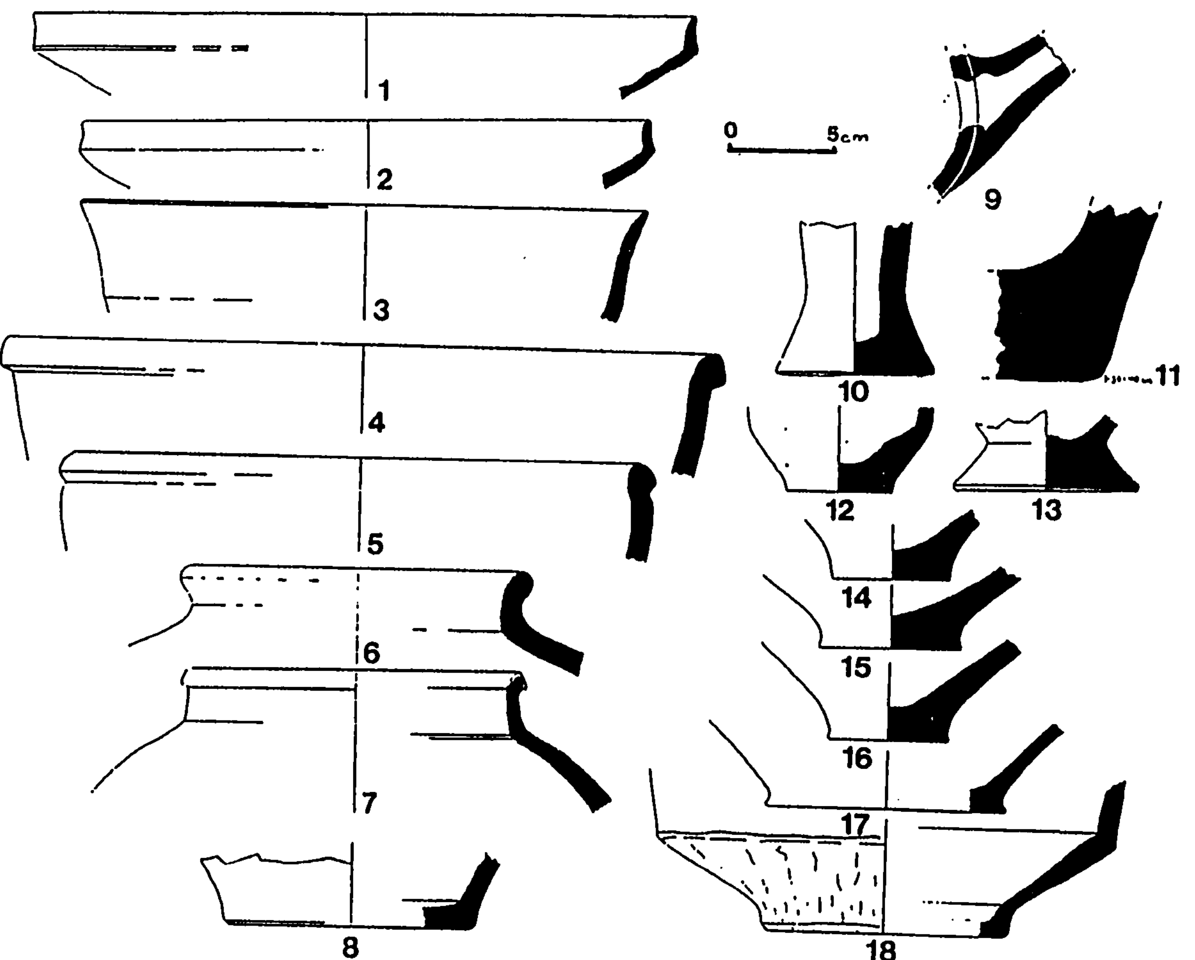


Figure 6.19: Ceramics from the Domestic architecture sounding (Locus 43): lowest cultural levels.

OTHER ARCHITECTURE FROM THE NORTH MOUND

Surface finds from the domestic area described above are similar to those on the surface of the north mound around the kremel to the south, west and north. Two excavations confirmed that these were areas with architecture similar to the domestic architecture.

In 1981 A.F.Ganyalin excavated a 5.5 x 3 m area of architecture on the west side of the mounded area of the north mound. He was hoping to find a large "city wall" but did not locate this in his trench. In 1989, we cleaned Ganyalin's excavation and mapped the architecture.

Floors of two rooms were found 35 cm below the surface. The walls were made of bricks with dimensions of 15 x 20 x 45 cm, similar to the brick sizes from the 1989 domestic architecture. Room 1 is a long room, 2.30 m wide and more than 5.5 m long. The room had a zakladka type brick floor. A threshold, similar to the threshold in the 1989 domestic architecture, leads from Room 1 to Room 2 (Figure 6.20). Room 2 had a poorly preserved tamped earth floor, and white gypsum plaster coated the wall face-- an unusual feature at Gonur.

On the west side of the north mound, several later burials and cenotaphs were excavated in 1989. Burial 40 intruded into earlier walls and a floor associated with period 1 type ceramics (Figure 6.21). This architecture was less deflated than that of the 1981 excavation, and a floor

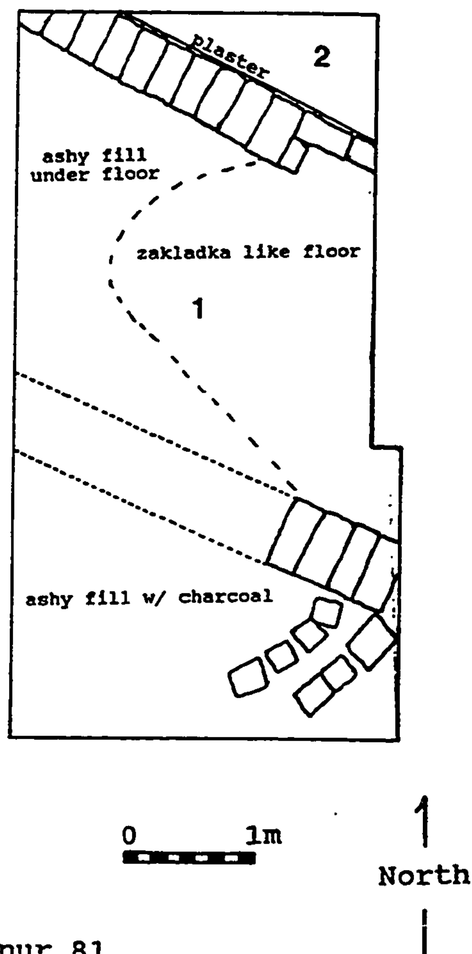
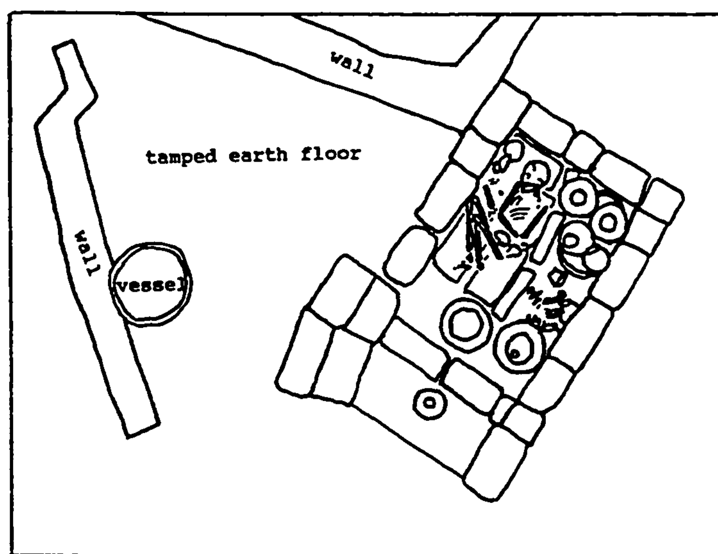


Figure 6.20: Plan of the 1981 excavation on Gonur north, based upon 1989 cleaning. Period 1. Rooms 1 and 2 are part of an architectural complex similar to the domestic architecture.



North

0 1m

Gonur 89
north
Burial 40

Figure 6.21: Plan of the architecture which was excavated during the uncovering of Burial 40. Burial 40 is Period 2, while the two walls and associated floor is Period 1, similar to the domestic architecture.

was found 45-50 cm below the surface. The northern wall belongs to an unexcavated building to the north. On the east side, a wall fragment forms an oblique area with a tamped earth surface upon which ceramics lay. The bottom half of a large storage jar was built into the wall and under the surface, very similar to the storage jar found in Room 2 of the 1989 domestic architecture except that it was upright.

Everything about these areas seems similar to 1989 domestic architecture in the 1981 excavation, the walls follow the slope of the mound, the rooms are large with a brick floor and a threshold into another room. In the area around burial 40, small walls with features such as storage jars are similar to 1989 domestic architecture. I suggest that a pattern of households and courtyards would be found around these areas if further excavations were carried out. The size of the bricks, wall construction, and associated ceramics are similar to the contemporary occupation of the 1989 domestic architecture. There is uniformity in the pattern of surface finds stretching in a wide band around the depression south of the deep sounding and to the east, this suggests a continuous living area.

Other areas at Gonur

It is unclear whether there was any Period 1 occupation on the other mounds at Gonur. Several excavations to the materik (virgin soil) on the south mound have not discovered any walls or floors which can be attributed to

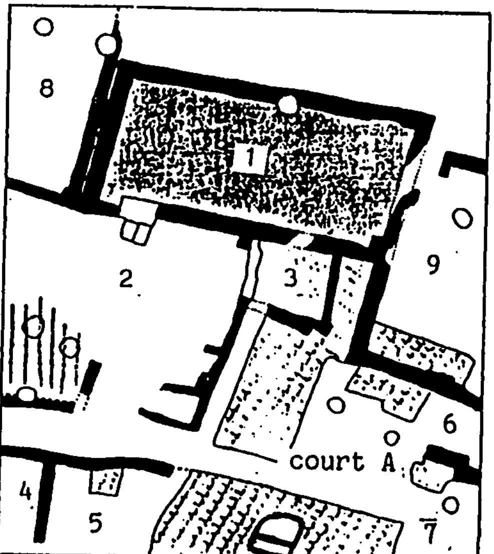
Period 1. However, several pits were located which contain Period 1 ceramics and small finds.

ARCHITECTURAL COMPARISONS

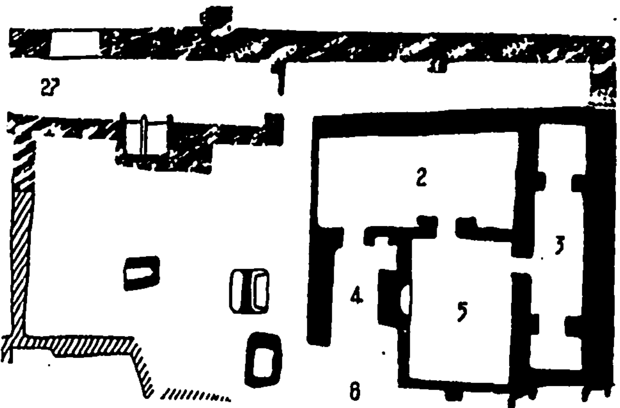
Gonur's domestic architecture is different than that of the contemporary late Namazga V urban sites of the Kopet dag foothills. At Altyn depe, the rooms in the domestic architecture of Excavation 10 are smaller than the rooms at Gonur and more complex than at Gonur, Kelleli 4 and Togolok 21, and more complexly interconnected, with many doors and corridors.

In contrast, the household architecture of Gonur is similar to that of other Period 1 sites of Margiana. Room size, number of hearths per complex, and the number of rooms connected by doorways at Kelleli 3 and 4 are very similar to Gonur domestic architecture. Unlike Gonur, however, these domestic units are isolated from other architecture by an enclosing set of walls and towers.

The domestic architecture at Gonur is similar to patterns of household units at Kelleli 4. For example, Rooms 2-6 at Kelleli 4 appear to form one unit (Figure 6.22). Room 5 at Kelleli 4 is comparable to Room 1 at Gonur, with a hearth in the wall. Room 2 at Kelleli 4 and Room 2 at Gonur are both large rooms opening onto an alleyway (as at Gonur) or onto a short corridor and alley (Rooms 4 and 6 at Kelleli 4). The alleyway at Kelleli (Room 6) leads to a



Gonur,
north mound



Kelleli 4



Figure 6.22: Comparison of Gonur, domestic architecture and part of Kelleli 4.

common courtyard where four large ovens are located; this is a clear parallel to the organization of the domestic architecture at Gonur. There were a total of six apartments at Kelleli 4, each composed of three or four rooms with an associated large oven and several hearths built into the walls.

At Kelleli 4, the doubled exterior walls form a corridor. The corridor is divided into long narrow rooms which are connected to the interior rooms. These rooms typically contained many storage jars but no hearths or other habitation debris. The double exterior walls and towers at these sites appear to have been for defense and are similar in plan to 'casemate walls' found in later fortress architecture from which artillery was fired. Casemate rooms are also known from Early Iron Age Syro-Palestinian fortresses. While casemate walls are generally filled with rubble in Syro-Palestinian forts, in some instances the walls were not filled and were used for storage, and possibly habitation (Mazar 1990).

Other period 1 settlements are also fortified domestic compounds. For example, Kelleli 3 has six towers on each side and a gateway to the exterior in the middle of each side (briefly described in Chapter 2). The interior of the building complex was not excavated, but seven "micro-complexes" were identified along the southeast corner (Masimov, pers. comm.). These are large 3-4 room

apartments, most probably for single households each of which appear to have individual court areas in addition to a shared interior courtyard.

Kelleli 3 and 4 have features which are more evocative of the architecture of traditional Central Asian agricultural oases than of Mesopotamian palaces or of Kopet dag foothill cities. The form of the enclosed building complexes in Margiana is similar to that of the qala, a traditional building found in oasis areas of Central Asia and Afghanistan (Pugachenkova 1958; Szabo and Barfield 1991). The fortified buildings, or qala, are found for the first time in Central Asia during this period.

At Gonur, the households were part of a large village agglomeration surrounding the monumental building of the north mound. Similar "village" level architecture is likely to be found on all of the smaller sites of the Gonur oasis dating to the initial period of widespread occupation of Margiana.

THE EARLIEST MONUMENTAL ARCHITECTURE AT GONUR

When Gonur depe was discovered in 1974, wide walls oriented north-south in a rectangle covering 130 x 120 m could be traced on the surface of the central part of the north mound. Excavations (50 x 60 m) carried out within the southwest corner of this area from 1978-81 revealed part of a very well preserved large building with a double exterior

wall, corner towers, and large straight interior walls: the kremel (Sarianidi 1990).

I re-examined this architecture in 1989 in order to compare it to the domestic architecture and to the later monumental architecture of period 2 (Figure 6.23). The walls were preserved to a maximum height of 2 meters. The building has a single general plan but with several phases of architectural modification. Preservation of architecture to this height has not been found elsewhere in Margiana or at any other Bronze Age site in Central Asia. This architecture provides insight into details of the typical Bronze Age Margiana architecture which is usually preserved only to the bases of the walls.

As in the domestic architecture, the bricks in the walls are laid in header and stretcher rows. Benches, which I found preserved only to ground level in the domestic architecture, must have been similar to the 40 cm tall bench found in Room 1. Doorways have raised doorsills that are preserved to a height of 8-12 cm. All walls were preserved to a height of 1.5-2 m no matter what their thickness: those 25 cm thick at the base (Rooms 8 and 17); 40-45 cm thick (Rooms 3,10,11,and 18); and as much as 2 meters thick (Room 1) were equally well preserved. The building was fortified with thick exterior walls and towers, but no windows or arrow slits. Parthian and Sasanian mudbrick fortresses in Margiana, which have similarly thick exterior walls, stand

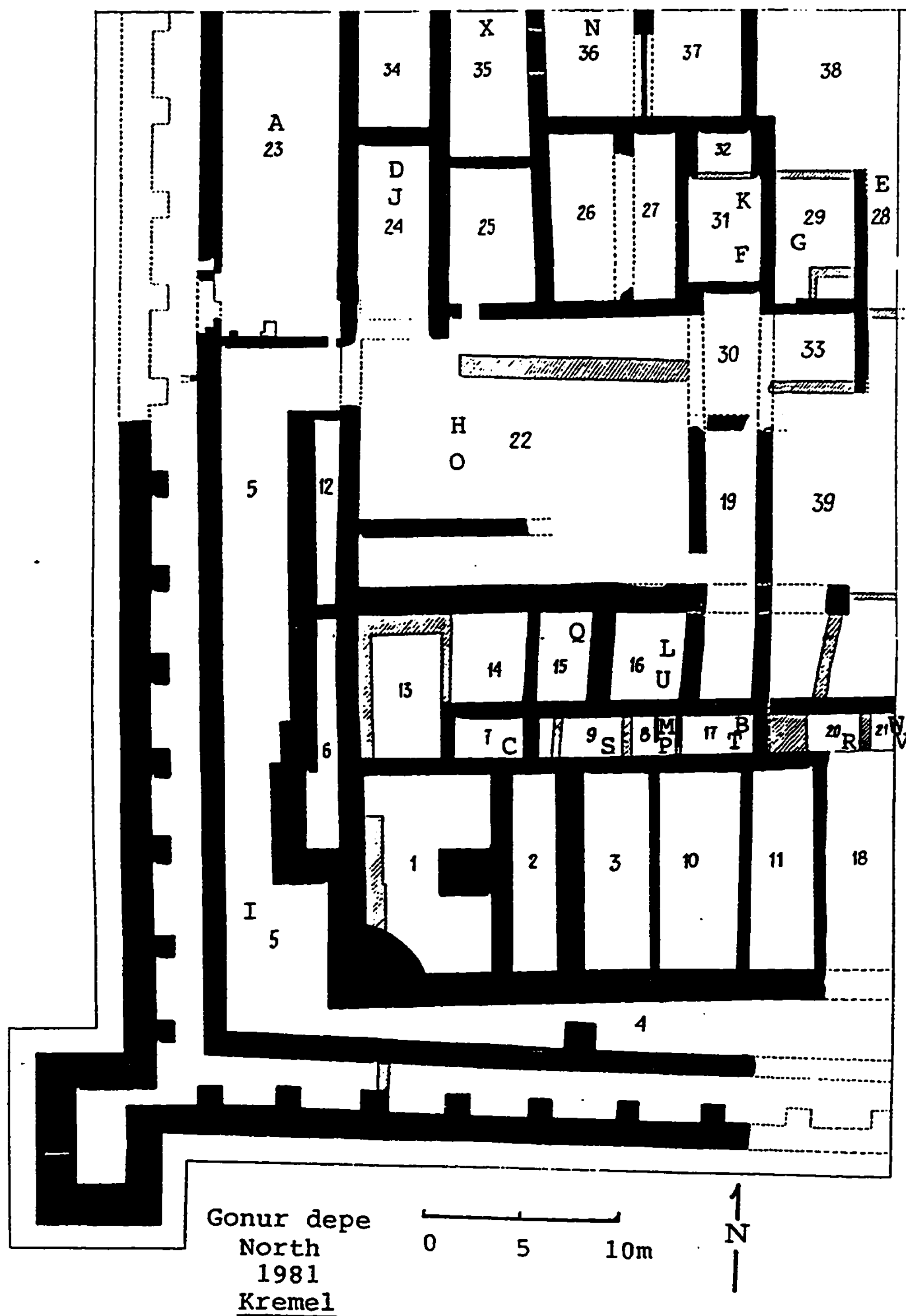


Figure 6.23: Plan of the north mound monumental building "kremel", 1981 excavations, based upon Sarianidi (1991). Distribution of small finds based upon Sarianidi 1990 and excavation notes.

10-15 meters high without any openings (Pugachenkova 1958). The Bronze Age architecture must have been comparably large.

Stratigraphy and phasing

The architecture of the kremel was built upon a sterile yellowish sandy deposit similar to the materik found in the deep sounding. In most rooms, sand covered the lowest floors, which had been found mostly cleared of debris (Sarianidi 1990). Artifacts which were found on the original floors of the building are indicated on the plan (Figure 6.23) by letters which correspond to the following figures: 6.25, 6.26 and 6.27. Several areas of in situ materials were found, for example in Room 4, described below. A series of radiocarbon samples were taken during the excavations by Sarianidi which (when calibrated) correspond with those from the lower levels in the deep sounding and the domestic architecture (See Chapter 5; Sarianidi 1990).

The second phase of use is indicated by architectural modification using bricks of a different size. The bricks of the original construction are generally of the dimensions 45 x 20 x 15 cm, the same size as that used in the domestic architecture. The second phase bricks are distinctly shorter and taller, 35 x 30 x 16 cm on average, and have little if any mud mortar between them. During the second phase of occupation, many rooms were closed off, such as Rooms 7-9 and 13-17. These rooms appear to have changed function.

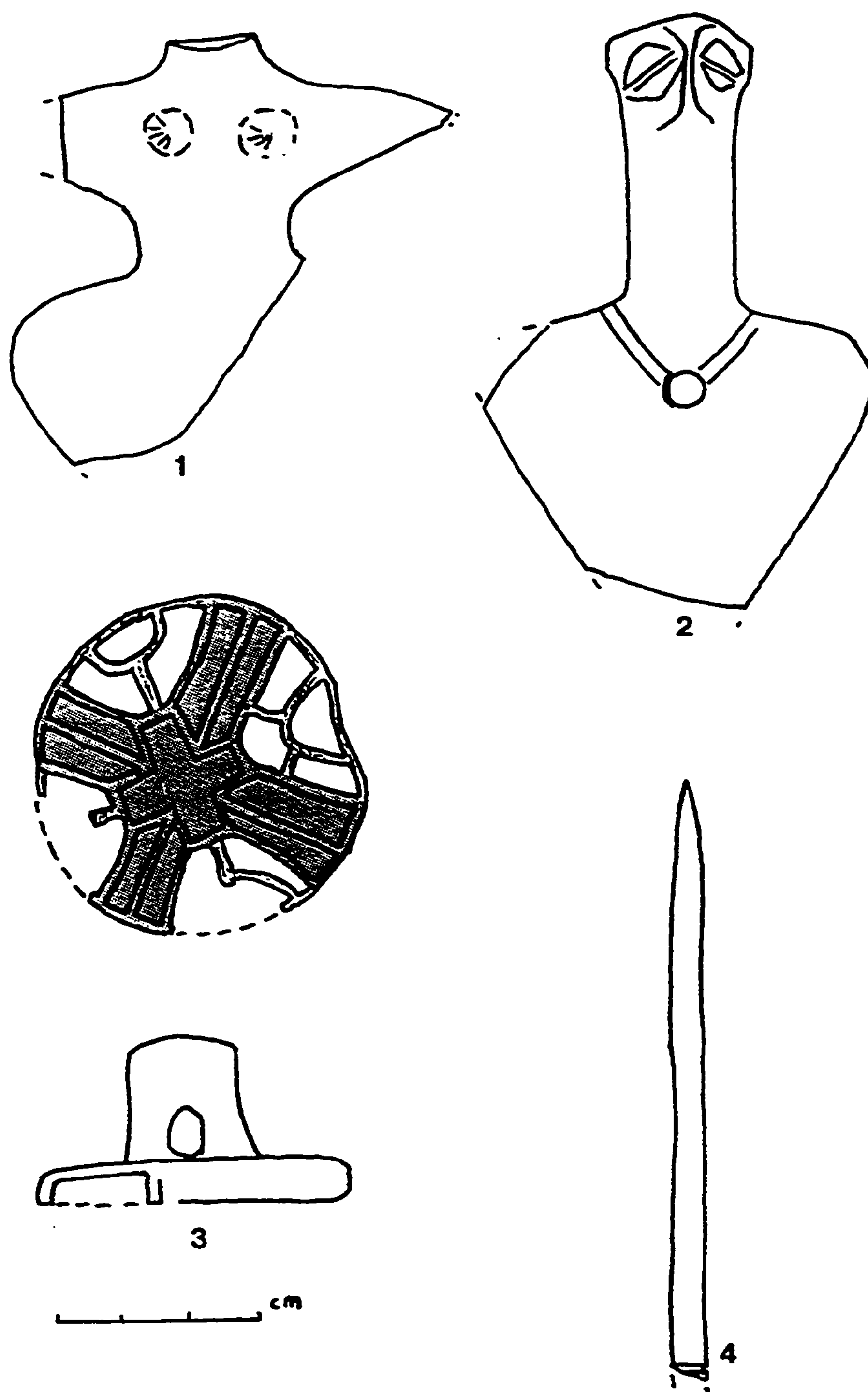


Figure 6.24: Finds from the monumental building ("kremel"), Room 4 floor, near hearth.
1&2. terracotta figurines
3. bronze compartmented seal
4. bone needle, tip reddened.

A. Terracotta figurine, Room 23, Pl 22:1

B. Terracotta figurine, Room 20, Pl 22:13

C. Terracotta figurine, Room 7, Pl 22:10

D. Terracotta figurine, Room 24, Pl 60:1

E. Terracotta figurine, Room 28, Pl 17:10

F. Terracotta figurine, Room 31, Pl 20:20

G. Terracotta figurine, Room 29, Pl 22:12

H. Ceramic phallus, Room 22, Pl 60:2

I. Ceramic spout, Room 5, Pl 24:9

J. Glazed tile, Room 24, Pl 91:1

K. White stone ring, Room 31, Pl 33:54

L. Steatite bowl, Room 16, Pl 28:11

M. Steatite bowl, Room 8, Pl

N. Steatite bowl, Room 36, Pl 28:4

O. Alabaster footed cup, Room 22, Pl 4:2

P. Steatite whorl, Room 8, Pl 25:11

Q. Steatite macehead, Room 15, Pl

R. Bone needle, Room 20, Pl 29:14

S. Bone needle, Room 9, Pl 29:9

T. Bone needle, Room 17, Pl 29:11

U. Bronze pin, Room 16, Pl 35:7

V. Bronze fragment, Room 21, Pl 37:21

W. Lead whorl, Room 21, Pl 37:20

X. Steatite bowl, Room 35, Pl 28:1

Figures 25, 26, 27: Period 1 artifacts from the kremel (Plate no.s refer to Sarianidi 1990).

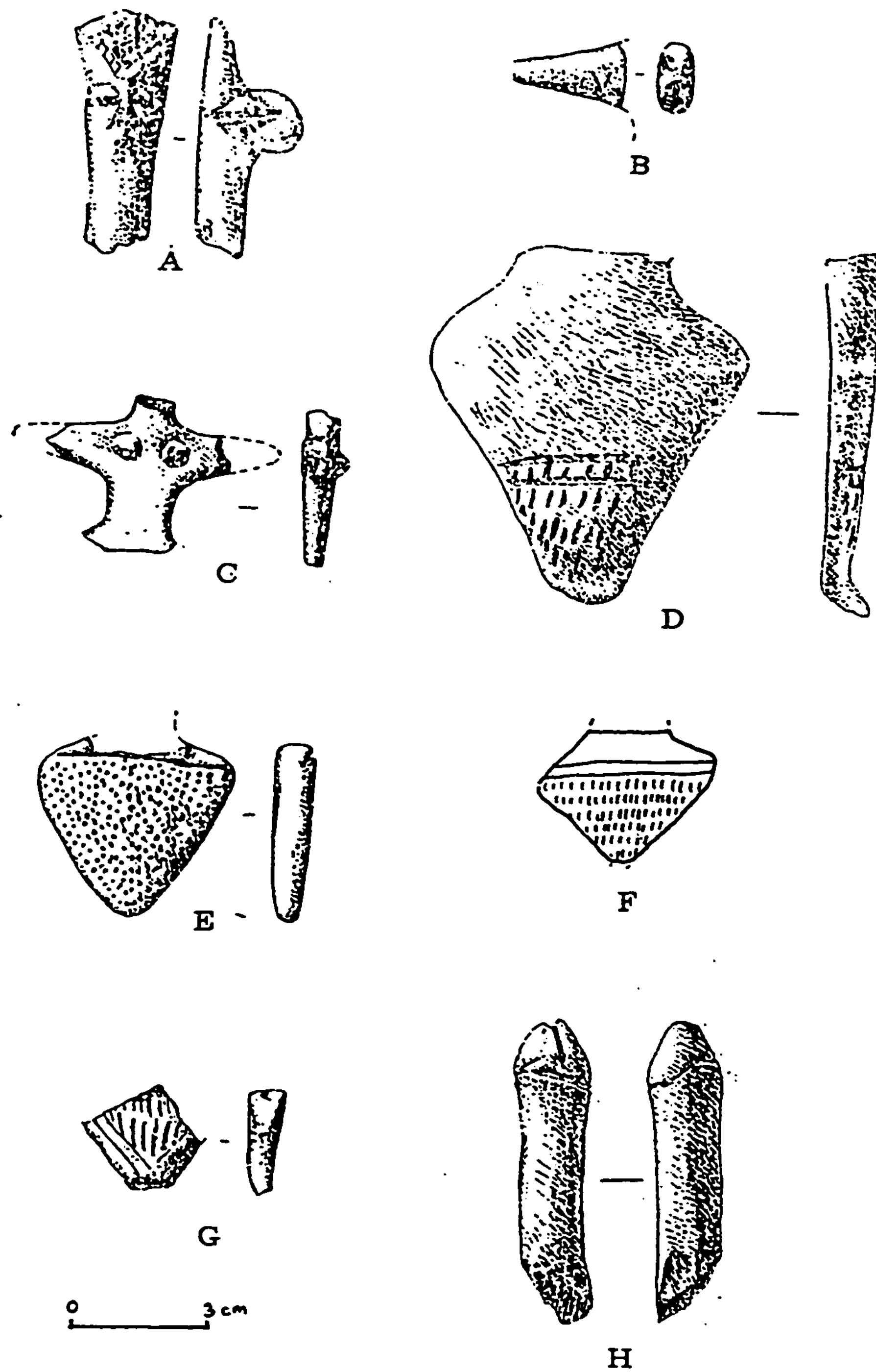


Figure 6.25: Small finds from the <u>kremel</u>.

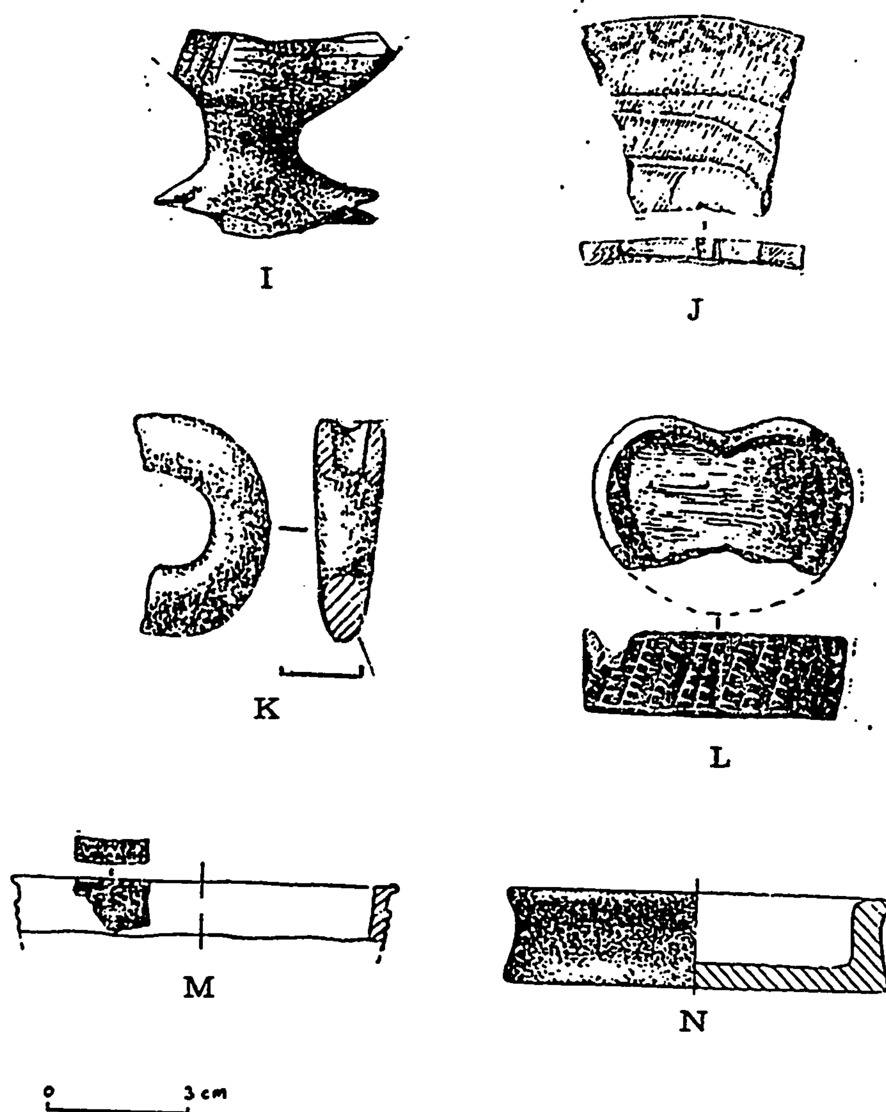


Figure 6.26: Small finds from the Kremel.

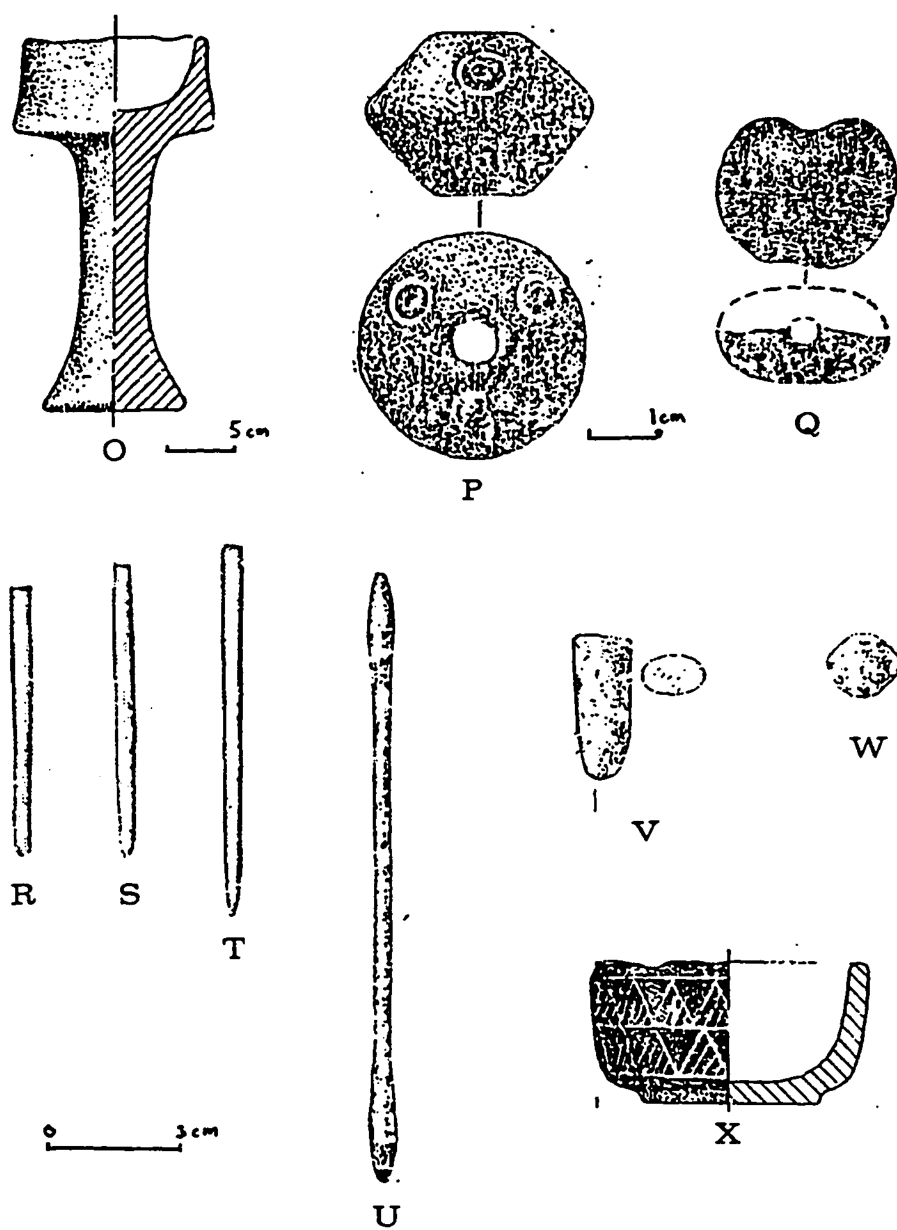
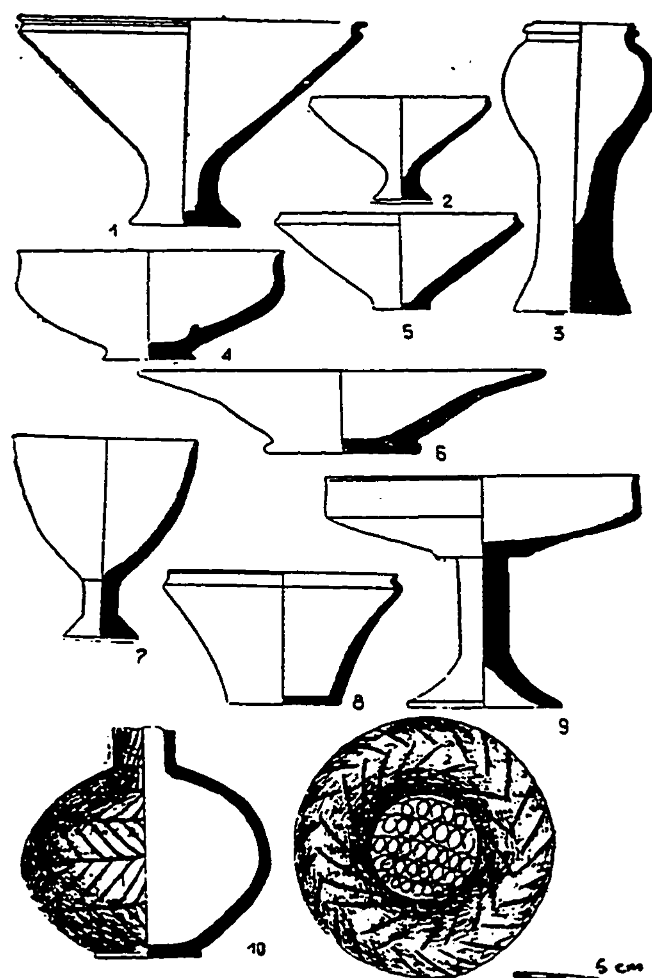


Figure 6.27: Small finds from the kremel.



1) Room 28 2) Room 17 3) Room 14
4) Surface 5) Room 30 6) Room 32
7) Room 17 8) Room 30 9) Room 32
10) Room 29 (Sarianidi 1990, Fig 13)

Figure 6.28: Ceramics from excavations at the kremel Typical of Margiana Period 2 (BMAC), found in the upper levels at the kremel.

Corridors were divided into small doorless rooms, probably for storage, and large court areas were sub-divided into rooms. However, the building appears to have maintained the fortifications as well as the overall organization of courts, corridors, and rooms.

A third phase of occupation or re-use occurred after the building had been abandoned and one meter of fill had accumulated. Doorways were cut through the upper parts of walls, and in the cut of the northern balk, hearths and features could be seen eroding from a level almost one meter above the original floors. Ceramics illustrated that came from the building (Figure 6.28) most likely are associated with this phase. They are similar to those from Layer 6 of the deep sounding (period 2) and have close parallels to the ceramics of Togolok 21 and to Bactria. These contrast with the small finds found on the floor of Room 4, which correspond to Layers 1-4 of the sounding (period 1).

A final use (latest phase) of the building was as an area for burials in the upper layers of the deposit. These burials were simply placed in shallow pits with a small assortment of Period 2 type grave goods and are similar to the burials in the eastern part of Togolok 21 or at Togolok 1. These are contemporary with the burials surrounding the area of the kremel which have rectangular graves constructed of brick and many grave goods.

Exterior corridor

The exterior wall of the south side was 1.25 meters thick with an interior parallel wall forming a large corridor. Interior pilasters strengthen the wall and may have supported a roof. The fill in this corridor contained ashy midden, apparently from the upper levels (Sarianidi 1990:19). This corridor is similar to the exterior wall and corridors at Kelleli 3 and 4, except that it is on a much larger scale. The doubled exterior wall most likely supported a raised walkway around the top and functioned as a double or "casemate" wall for defense.

Interior corridor

Rooms 4 and 5 form an interior corridor. In the eastern end of Room 4, an ashy hearth deposit (1.0 x .4 m) on the floor was found which included the bones of Bos and Ovis/Capra, a compartmented seal of the geometric type, a small bone needle, and three human figurines of Namazga V type (Figure 6.24). This feature was considered to be a 'sacrificial place' (Sarianidi 1990:19), but is similar to the hearths and associated artifacts in the domestic architecture of Rooms 1 and 8. In addition, the assemblage is similar to the figurines, bone needles and bones from the lower levels of the deep sounding, which came from a domestic midden possibly originating from this building. This corridor continues north (Room 5). A radiocarbon sample from a similar hearth (LE 2408) falls generally in the range

of the late third-early second millennium (see Chapter 5).

Of particular interest are Rooms 6 and 12. These long narrow rooms are completely closed without any doors and with their surrounding walls preserved to a height of two meters. There is a deep plastered cistern for water, or a well, in Room 6. Most likely these were covered, with access from a floor above. Long narrow rooms continue to be typical in the desert oasis architecture from Period 2 at Gonur, Togolok 21 and in Bactria. Traditional qala architecture often has storage in the walls next to the exterior wall (Szabo and Barfield 1991:195). Such rooms are not found in the foothill zone of the Kopet dag or mountain regions of Central Asia and may be an adaptation to the desert/oasis environment.

Courtyard and adjacent rooms (13-38)

The interior corridor, Rooms 4 and 5, lead to a large courtyard (Room 22). The courtyard originally had small parallel walls in its south part that were apparently razed during a later phase of occupation. Several floor levels were found superimposed in the courtyard. In the fill of the courtyard several small finds including an alabaster footed cup came from apparent floor contexts (Figure 6.27.O).

Rooms to the north of the courtyard were occupied and modified during all of the three architectural phases. Some walls were preserved only at the base (Figure 6.23:dotted walls), and often had floors covering them.

During period 2, new walls were built (Figure 6.23:hatched walls), and some rooms closed off (Rooms 31,32). A marked floor level is seen in the north balk section at 1.0 meter above the original Period 1 floor. Ceramics found in Room 32 are similar to the ceramics found in period 1 levels of the deep sounding.

The whole vessels published from this building appear to have come from the upper level (period 2), and a glazed tile from Room 24, typical of the medieval Islamic period, is clearly intrusive (Sarianidi 1990:plate 13; see Figure 6.26:13).

To the south of the courtyard, Rooms 13-21 appear to be two east-west corridors. Many small objects from the first phase were found here including bone needles, steatite vessel fragments, and terracotta figurines (figures 24-27). These corridors were later divided with small secondary walls.

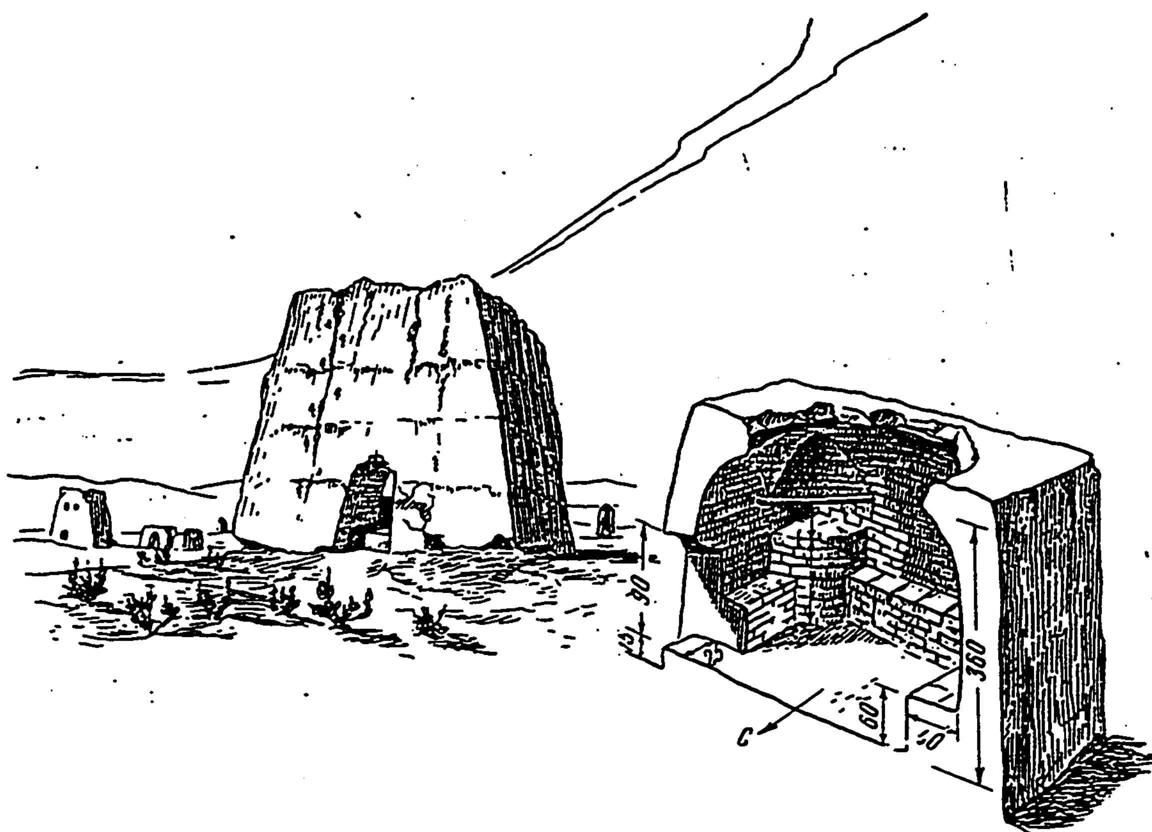
The south wall of Room 8 is reddened near the top from secondary reuse during the third phase. Ceramics similar to the upper level of the deep sounding (Period 2) were found in Room 14, Room 17, and in the 'surface' layer. The grey burnished ware (Figure 6.28:10) is probably from Djarkutan (Djarkutan period), and the red burnished ware (Figure 6.28:11) has a distinctive form, as does the bowl (Figure 6.28:4). These last two have previously been reported as occurring with BMAC artifacts at Dashli (Sarianidi 1977).

Rooms 1-18

The rooms in the area just north of the corridor (Room 4) are 10 meters long. Rooms 2-18 are unusual in that they had no doors in the first or second phases. These rooms had sand on their original floors and had almost no artifacts on them or in the fill just above the floors.

Room 1 is a large rectangular room with very thick walls. On the basis of brick size, I suggest that it was entered through Rooms 13-16, which were blocked up during the second phase (contra Sarianidi 1990:19). On the east wall was a large solid pilaster as tall as the preserved walls. A one meter tall curved platform or bench in the southwest corner was built with the origin construction of the building as its bricks interfingered with the wall. A 40 cm tall bench was built against the west wall. Curved platforms or benches are found in mudbrick architecture supporting arches and domes. An analogy from late medieval Anau illustrates this feature (Figure 6.29). At the corners of the first floor are squinches to support the ceiling, and under them are semi-circular platforms. In the third phase (period 2) a floor was constructed more than 1 meter above the original floor.

Room 2, a corridor-like room with no door or entrance, had a double-chambered oven and a chimney (in which ashes remained) in the southwest corner. The walls dividing Rooms 3, 10 and 11 were built against the north and south walls.



Анау. Жилой дом.

Figure 6.29: Late medieval domestic architecture form Anau, Turkmenistan. Note round platform beneath arch in the corner (Pugachenkova 1958).

Although the bricks are similar in size to the bricks of the original structure, the walls appear to be a late addition. Room 3, 10, and 11 originally formed one large room or court, and a doorway from Room 11 to 18 was blocked off at the same time that the secondary walls were built.

ARCHITECTURAL PARALLELS

In comparison to Kelleli 3 and Kelleli 4, the walls of the kremel at Gonur are much larger and more regularly laid out. The kremel has regularlly planned series of rooms and courts unlike the domestic units of 3 or 4 rooms. The kremel has few of the wall hearths and ovens found in the domestic architecture.

During the initial occupation of the oasis there appears to be already differentiation of 'domestic' architecture, and 'monumental' architecture. Traditional modern architecturally documented 'elite' architecture of the desert oases of Central Asia (Margiana, Bactria, Khiva, Bukhara, etc) is the 'ark' or citadel. This architecture is part of the enclosed fortified settlement, unlike the elite architecture of the Kopet dag foothill sites or sites in the greater Near East. The 'ark' was the fortified administrative center or 'palace' of the local khans or landowning chiefs.

The common features of the earliest oasis architecture may be summarized as follows. The rooms are large (compared

to the foothill region). There appears to be 3-4 rooms per household. There is the common use of below-ground storage areas for water or grain. The initial occupation is characterized by enclosed planned living compounds (qala), which have defensive towers and "casemate" walls. The monumental architecture appears to be the source of the Central Asian fortified citadel or 'ark'. Altogether, this demonstrates that the first Bronze Age occupation of the desert oasis of Margiana resulted in an architectural revolution. This architectural form appears to have been successful and to have spread to the other oasis areas of northern and southern Bactria by the time of the Bactrian-Margiana Archaeological Complex.

CHAPTER 7

The Period 2 (BMAC) ARCHITECTURE

Excavations at the south mound at Gonur have revealed a large single building complex that is later in date than the domestic architecture or the kremel on the north mound. The south mound rises 1.5-2 m above the plain and is wholely composed of the building complex enclosed by a massive wall which outlines a parallelogram 115 m on a side. No mounding occurs beyond the walled area and no occupational levels were found in soundings made off of the mound to the south and to the west.

The south mound is currently being investigated using widescale horizontal excavations (Figure 7.1). While the entire plan is presently unknown, this large building complex has many features typical of the architecture of Period 2 in Margiana and related sites of the BMAC in northern and southern Bactria. The building at Gonur south is particularly interesting because its deep stratigraphy is better preserved than the Togolok sites or the Bactrian sites. The ceramics and small finds from the whole complex are similar to Period 2 from the deep sounding.

Method of widescale excavation

At Gonur south, horizontal excavations have exposed large areas of room complexes with the building. The goal

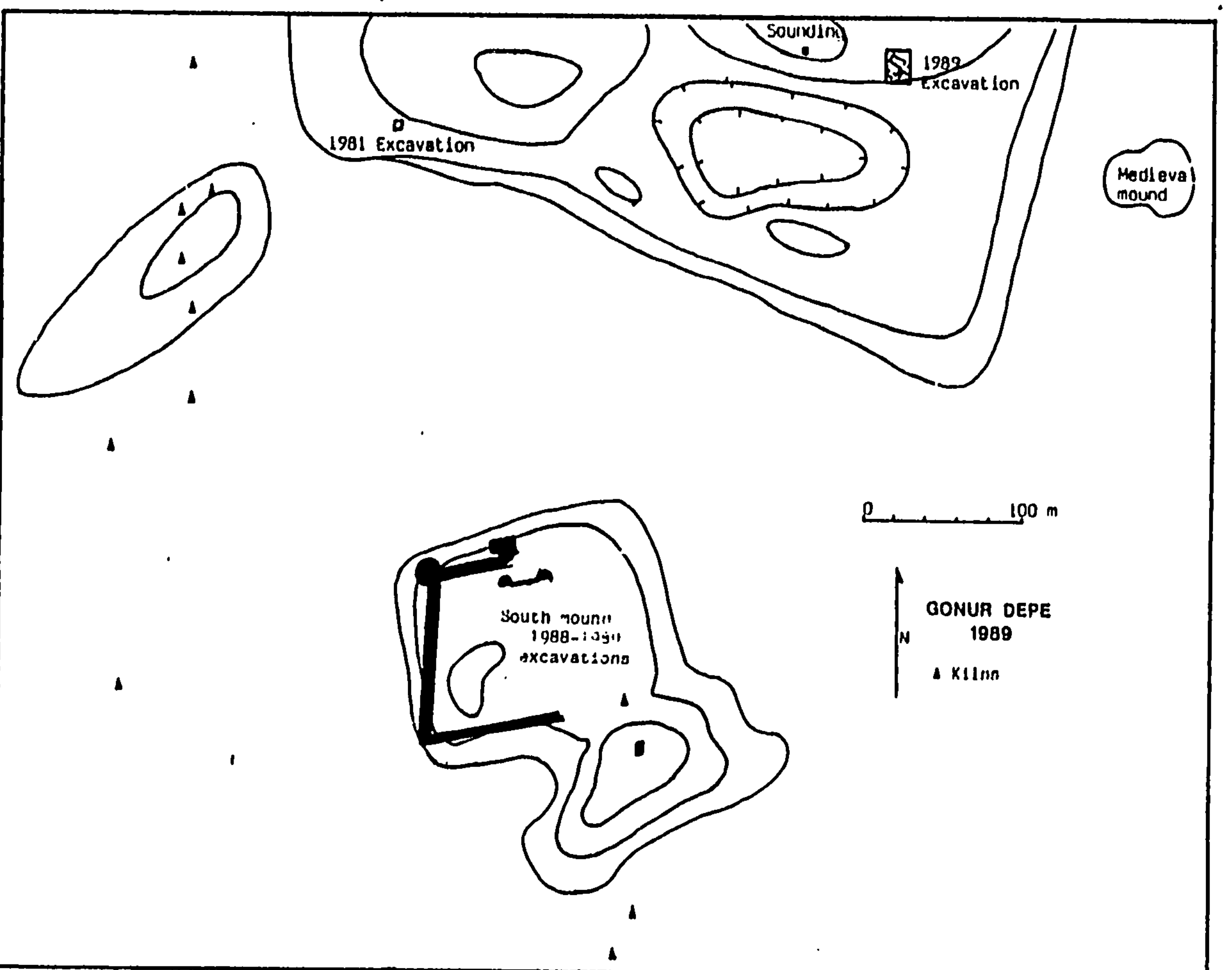


Figure 7.1: Location of the 1988-89 excavations at Gonur south

is 100% clearance of the building architecture. The method of excavations described below is similar to the methods that were employed at Togolok 21, Togolok 1, Kelleli 4, and the sites of northern and southern Bactria.

The excavation 'rows' are six and eight meters wide with seven meter balks between them. As of the spring of 1989 eight rows had been begun, with Row 1 at the north and Row 8 at the south wall. Excavations within each row are carried out in the following fashion: the soft surface layer is removed with flat shovels, or scraped with the blade on a small tractor, just to the point that harder intact deposits are exposed. This is done over the width of the row, for a distance of several meters at a time.

When the in situ layers are exposed, a sharpened flat shovel is skimmed over the surface and the difference between mud bricks (from walls) and collapse becomes clearly visible. Thus, the preserved tops of the walls are revealed across an extensive area. If no walls are noted in the skimming, then another several centimeters is skimmed off the wide surface. This is repeated until walls or floors are located. The system of walls as located on the surface is then outlined and individual rooms are designated. Each area enclosed by walls is considered a room,and is given a number. When rooms of the upper architecture are cleared out, the walls are left standing and excavation continues within the confines of the pedestalled walls. Other

features, pots, baskets, etc., are sometimes also left in place. Normally the rooms are excavated to the floor or sterile soil. Small finds and special ceramics are described in field records called opisi, which list the significant finds by 'room' number and describe the artifacts. Bulk artifacts, such as ceramics, bones, and grinding stones, are placed in sherd yards by room number which allows for further study by specialists.

Complementary methods used in this study

Several sources were used for the following summary of the 1989 season of work: observations of the previous excavations and analysis of finds from the 'field museum' (the sherd yard); collaborative excavations of one row (Row 2); and fine-scale excavations of several types of rooms (domestic room, kelli, storage area, cenotaph and a burial). The excavations which I directed were integrated with the on-going Soviet excavations; the upper room designations act as loci, and I excavated the floor levels and plotted artifacts on floors. My goal was to examine separate contexts from each phase of occupation. Samples for radiocarbon analysis, ceramics and animal bones were recovered as well.

In the spring of 1989, no site plan had yet been made for the on-going excavations on the south mound. I made a tape and compass architectural plan (Figure 7.2) and

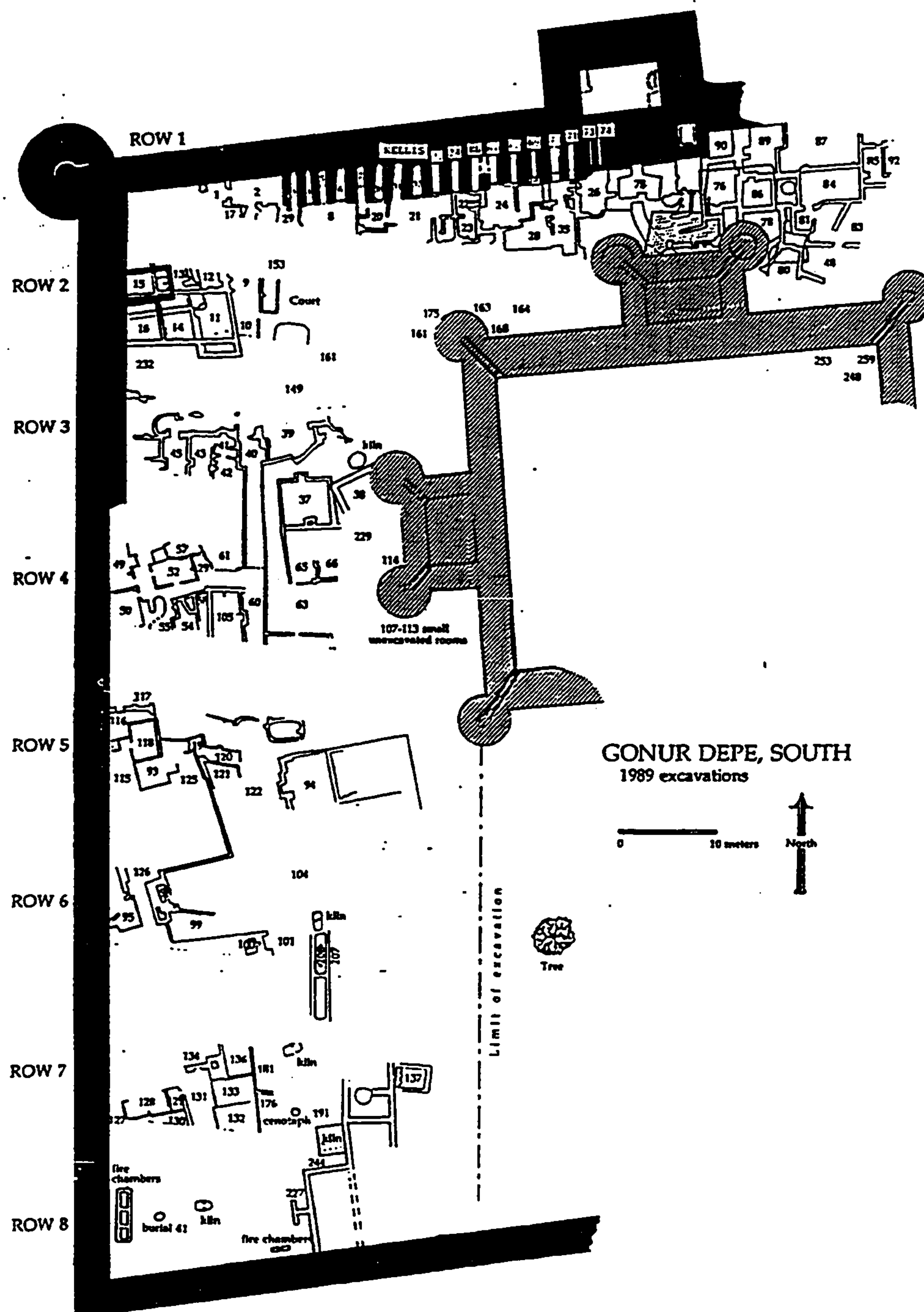


Figure 7.2: Preliminary tape and compass map of the building complex at Gonur south: excavations of 1988-89.

assigned phases to the architectural levels. The summary of work provided here presents only the observations made on the architecture up to the spring 1989 season. Some overall contextual observations were made when I attended a field seminar which Sarianidi led in October 1990.

STRATIGRAPHY

Architectural phases are defined in terms of superimposed floor levels and changes in the architectural layout through time. They thus differ from the chronological periods as defined by ceramics and small finds such as in the Gonur deep sounding. Gonur's south mound had multiple phases of architecture, as did the Togolok sites and Gonur north. The superposition of the architectural phases is best seen in the pedestalled upper walls, which form small stratigraphic sections wherever upper architecture was encountered. Walls of the various phases were traced from one excavation row to another, providing a preliminary history of occupation of the building complex. Burials and cenotaphs are found throughout the architectural remains. Presently we do not have the stratigraphic nor stylistic proof to determine which the architectural phase of an individual burial or cenotaph. Thus, burials and cenotaphs are grouped as separate "phase".

The foundations of the building are built below the surface of the local takyr, rather than on a hillock as on

the north mound or at Togolok 21. The interior architecture was built in a depression which may have been created by mining takyr mud for building the exterior wall. These interior walls were found to lie on yellowish-grey sand and clay located in sub-floor probes in Row 1 (Rooms 24, 30 and 68); Row 2 (Room 11); Row 3 (Room 37); Row 7 (Room 176); and 20 m to the west of the building complex in a test probe.

A series of large pits containing Period 1 type ceramics and small finds were excavated along the north side under Rooms 48, 66, and 76, and along the west side in Row 4 (Rooms 66 and 67) and in Rows 7 and 8. These pits appear to have existed before the south mound building complex was built. While it is possible that there was an earlier building somewhere on the south mound, the ceramics and small finds are so rare and fragmented that an earlier occupation of the south mound is not thought to have been intensive. Possibly the pits were dug by people from the north mound exploiting the clay of the takyr in this area. These Period 1 features do not appear to have been widespread and are exceptions to the pattern of walls and floors built upon sterile pale brown sand or the yellowish-grey takyr clays.

The first architectural phase: the original construction

In general, the exterior wall of the entire building complex and the interior walls were constructed as a single unit. During 1989, however, the first phase had only been

exposed in the northwest corner. The original building was surrounded by a monumental wall, 5 m wide along the west side and 4 m wide on the north side. Inside the wall was a system of straight and regular walls, usually 50 cm (approximately 2 bricks). The row of long narrow rooms "kelli's" also are part of the original building complex. The ongoing excavations have begun to reveal a large area of Phase 1 rooms along the south side (to the east of the 'limit of excavation' Figure 7.2). The entire building appears to have been originally laid out at one time on a single plan.

Phase 2

The second architectural phase was constructed on top of the razed remains of the interior walls of Phase 1 and are built in a slightly different orientation. While most of the interior walls of Phase 1 were razed, the exterior walls and the areas on the northern side were not razed and remained in use throughout the occupation of the building. This occupational phase appears to have been longer than the initial occupation, although the layout of interior architecture is less regular and less well planned.

Phase 3

Phase 3 walls and floors lay on 20-50 cm of deposit above the Phase 2 floors. In many places these walls subdivided Phase 2 rooms, reusing many older walls. In other places, the Phase 3 walls were superimposed upon the remains

of Phase 2 rooms. This upper phase of architecture is just below the modern surface. Deflated and eroded vessels lying on Phase 3 floors were often only covered by the broken surface crust and wind blown sediment.

Phase 4: BMAC Burials and cenotaphs

Cenotaphs, burials, and caches of ceramics are features intrusive into the midden levels of the rooms. The burials and cenotaphs found in the building complex at Gonur south, are labeled as 'Phase 4', although the burials and cenotaphs have ceramics and small finds identical to the surrounding middens and are roughly contemporary with Phases 1-3 of occupation in the building. The occurrence of burials and cenotaphs in abandoned rooms adjacent to occupied rooms is a pattern also found at Togolok 21 and Togolok 1.

Phase 5: Central Building

The Central Building on the south mound is the latest occupational phase at Gonur south. The architectural remains consist of the foundations of a structure with 3 meter wide walls and towers and some of the interior architecture of a large fortified building.

Key stratigraphic sections prove that the Central Building was constructed some time after the third phase of occupation in the main building complex: Phase 3 walls of the courtyard in Row 3 (Room 36) run under the Central Building; along the north side, Phase 3 room fill is stratified below the foundation of the Central Building in

Rooms 77, 78, and 80. However, it is possible that there were contemporary walls outside of the Central Building.

Phase 4 burials and cenotaphs are also found stratigraphically beneath the foundation of the Central Building's foundation along the north side. These include burials in the middens of Rooms 80 and 84; and cenotaphs in Rooms 27 and 84.

Relative dating

Ceramics of Period 2 at Gonur are associated with architectural Phases 1-4: the construction of the main building complex and the burials and cenotaphs. The individual phases cannot be distinguished by ceramics at this time, but are all part of the BMAC ceramic tradition (Figure 7.3). The Central Building, (Phase 5) excavated in 1990, contained little material on the floors but appears to be post-BMAC, with ceramics similar to the later Takhirbai materials (Masson 1959).

The small finds from Gonur south include a wide variety of metal and stone seals, other stone and metal objects, and terracotta objects of the BMAC style similar to those found at Togolok 21. It is not possible to place most of the finds from the horizontal excavations into a particular architectural phase, since many "rooms" as originally defined on the surface had more than one phase. However, it is important to note that the small finds and ceramics known

Figure 3: Ceramics from the 1988-89 excavations at Gonur south, from phase 1-4, all medium fine chaff wheel made vessels except 4 and 10.

1. Type 1.B.6, room 7.

2. Type 2.A.2, room 31.

3. Type 2.B.2, room 14.

4. Type 3.B.2, hand made, coarse, grog temper, room 15.

5. Type 1.A.4, room 6.
   (slightly larger than typical)

6. Type 2.A.2, room 48.

7. Type 1.B.3, room 24.

8. Type 1.B.3, room 20.

9. Type 1.B.4, room 8.

10. Type 3.B.4, hand made, coarse grog temper, room 18.

11. Type 3.B.2, red painted bands, room 18.

12. Type 1.B.2, room 20.

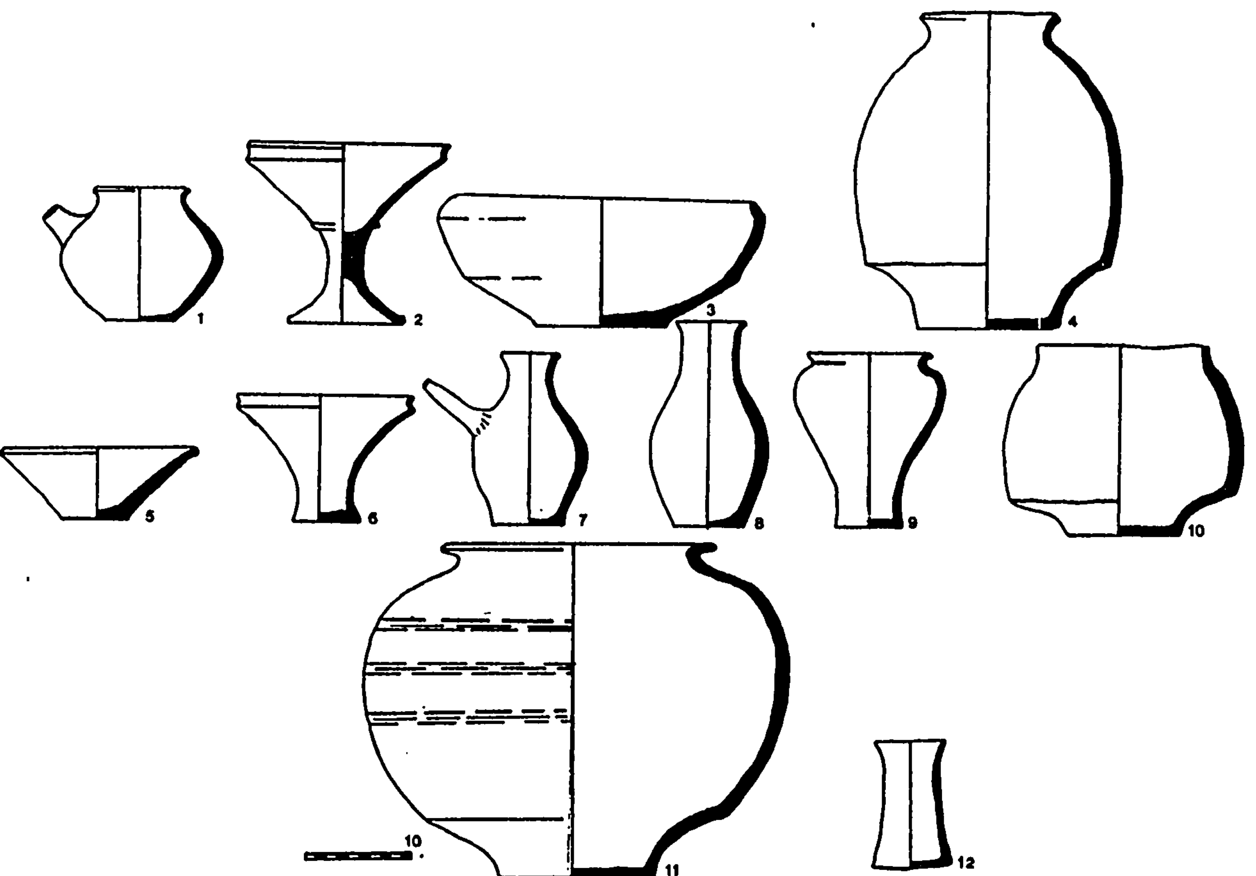


Figure 7.3: Ceramics from 1988-89 excavations at Gonur south, from Phases 1-4

to have come from floors of Phases 1-3, as well as from the burials and cenotaphs (Phase 4), are all BMAC style.

THE EXTERIOR WALL

The exterior wall of Gonur south is 3-5 meters wide. Because the building complexes at Kelleli 3 , Kelleli 4, and Gonur north (kremel) had double exterior walls, there is in fact very little difference in the thickness of the exterior defenses of the building complexes in Period 1 and Period 2. BMAC buildings, such as Togolok 21, Togolok 1 and Djarkutan 'temple', have thick exterior walls and round towers similar to Gonur south. Massive exterior walls made of mud brick are typical of the later (Parthian, Sasanian and medieval) architecture of the Margiana oasis (Pugachenkova 1958) and can be used as an analogy for the deflated remains of massive exterior walls in Bronze Age Margiana to suggest that these walls functioned for both defense and for insulation against the heat in the summer and the winter sand storms.

In traditional Central Asian pakhsa and mudbrick construction, the earth is usually taken from immediately outside the planned building, forming a drainage ditch and giving the appearance of a taller building (Szabo and Barfield 1991:143). This appears to have occurred at Togolok 21, for example. On the other hand, at Gonur south, the interior had been excavated out, apparently to make the

bricks or filling for the exterior walls. Along the north wall, near Room 80, the interior floors lay 80 cm below the exterior surface; and outside of the exterior wall along Row 2 on the west side, the floors lay 25-30 cm below the surface outside of the main wall (Figure 7.4). In a harsh environment, a semi-subterranean building would act to moderate the heat (Fitch and Branch 1960).

Only the base or foundation of the exterior wall is preserved. The entire excavated surface of the wall is made of regularly laid bricks ca. 25 x 40 cm in surface dimensions. The wall is eroded, sloping to the outside where it stands no more than 20 cm tall. Thin interior walls stand taller, filled with midden and brick fall.

Such extreme erosion of the main wall is not typical of a solid mudbrick wall, which should have been better preserved. There does not appear to be adequate debris mounded on this exterior wall to suggest that it was a solid four meters wide to a significant height. There are several possible explanations. First, the exterior walls could have been looted of bricks or brick-fall for the later construction of the Central Building. Second, the base of the wall may have formed a platform for a thinner exterior wall. An analogy for this is found in the monumental mud brick building complexes from West Africa, where buildings are surrounded by several meter wide platforms which serve as a foundation and as a walkway (Bourgeois 1989). Third, it

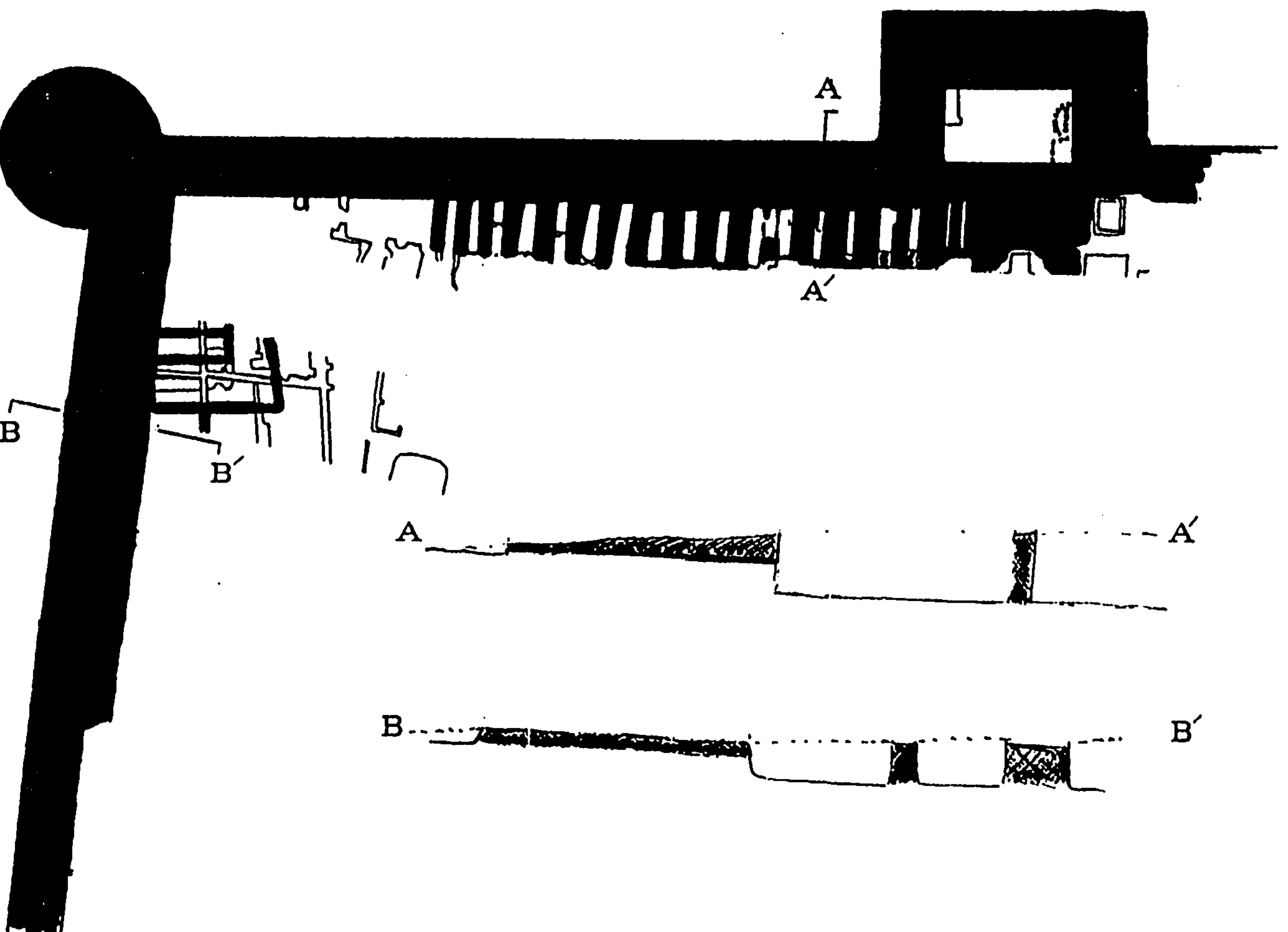


Figure 7.4: Exterior wall, north-west corner. Two sections across the wall demonstrate that the interior of the building had been excavated out.

is possible that the solid wide wall bases provided the foundation for doubled exterior walls, similar to those found in Period 1, and found in the BMAC architecture of Bactria (Dashli, Sapalli). The 10 m diameter wide tower foundation at Gonur south is solid and the tower probably had a room in it.

Round corner towers are typical of Margiana Period 2 architecture and are found at Togolok 21, Togolok 1, and Gonur south (Togolok 21 towers-Figure 7.5). At Gonur south itself, both square and round towers are found. In Bactria, buildings associated with the BMAC do not always have towers or have long narrow rooms which act as towers.

The central north wall tower is square, very shallowly preserved, and has a large room (8 x 5 m) inside. Interior modifications, evidently on a floor, were visible in the form of brick alignments and the base of a brick bench.

COLLABORATIVE EXCAVATIONS AT ROW 2

The stratigraphic cross section of Row 2 provides an example of the depositional history of these large buildings (Figure 7.6). In Row 2, three phases of architecture found were found: lower (Phase 1), middle (Phase 2) and upper floors (Phase 3). The upper walls define the excavation units of eight rooms and a courtyard.

The three superimposed floors were made of clay with flakes of white gypsum. Clayey floors with varying amounts

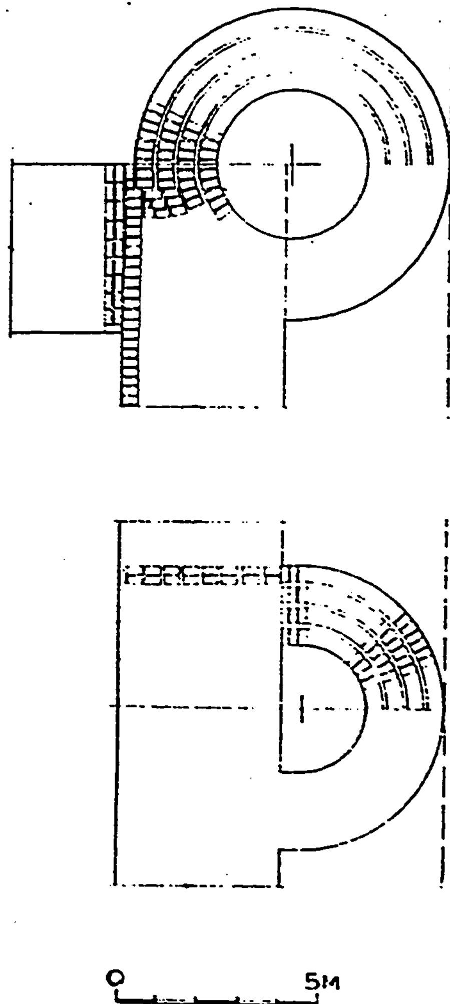
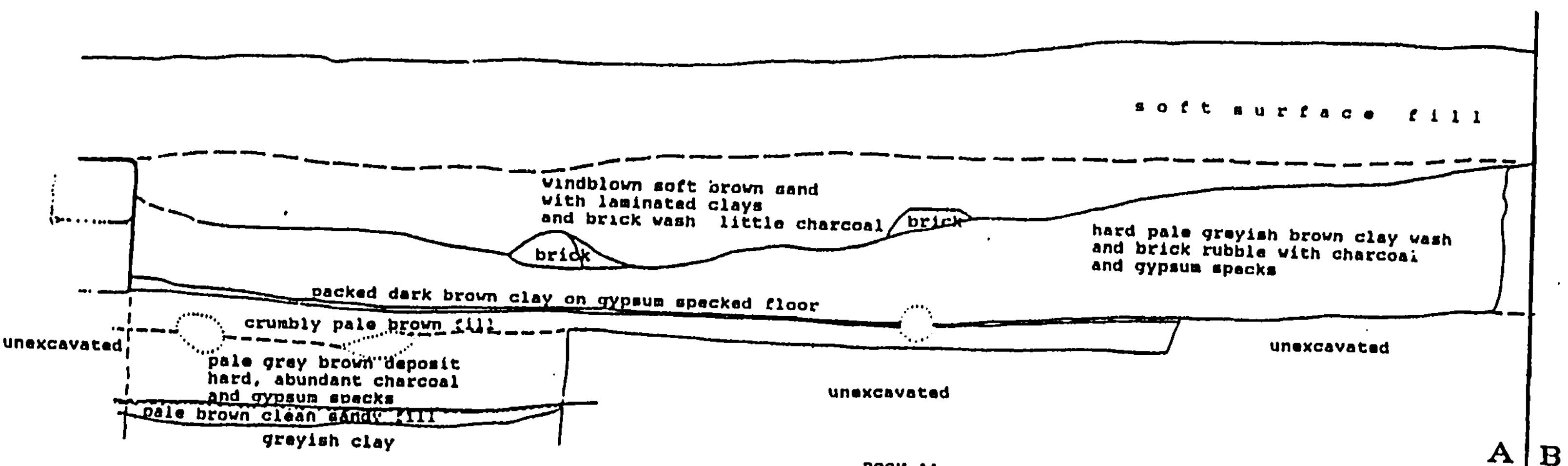
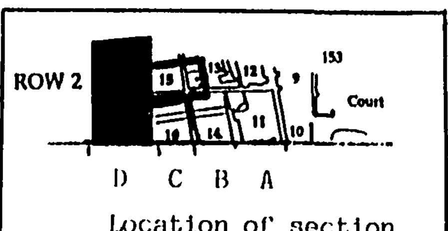
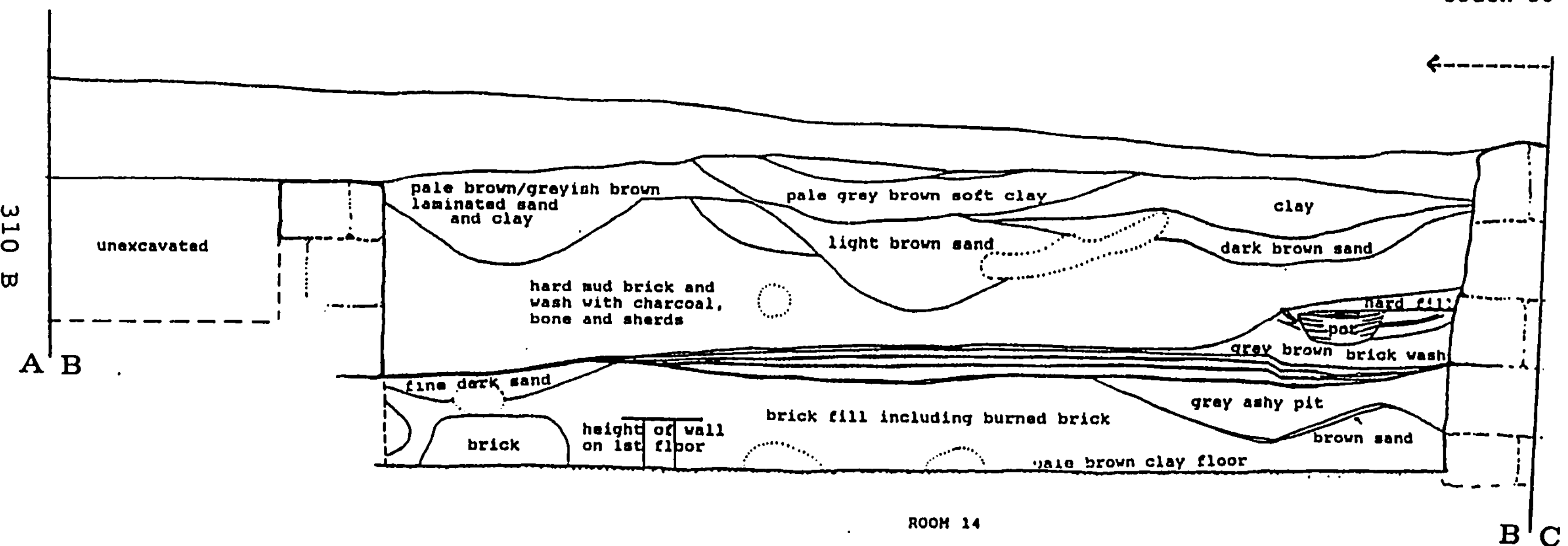


Figure 7.5: Pattern of bricks from towers and exterior wall at Togolok 21 (adapted from Sarianidi 1990)

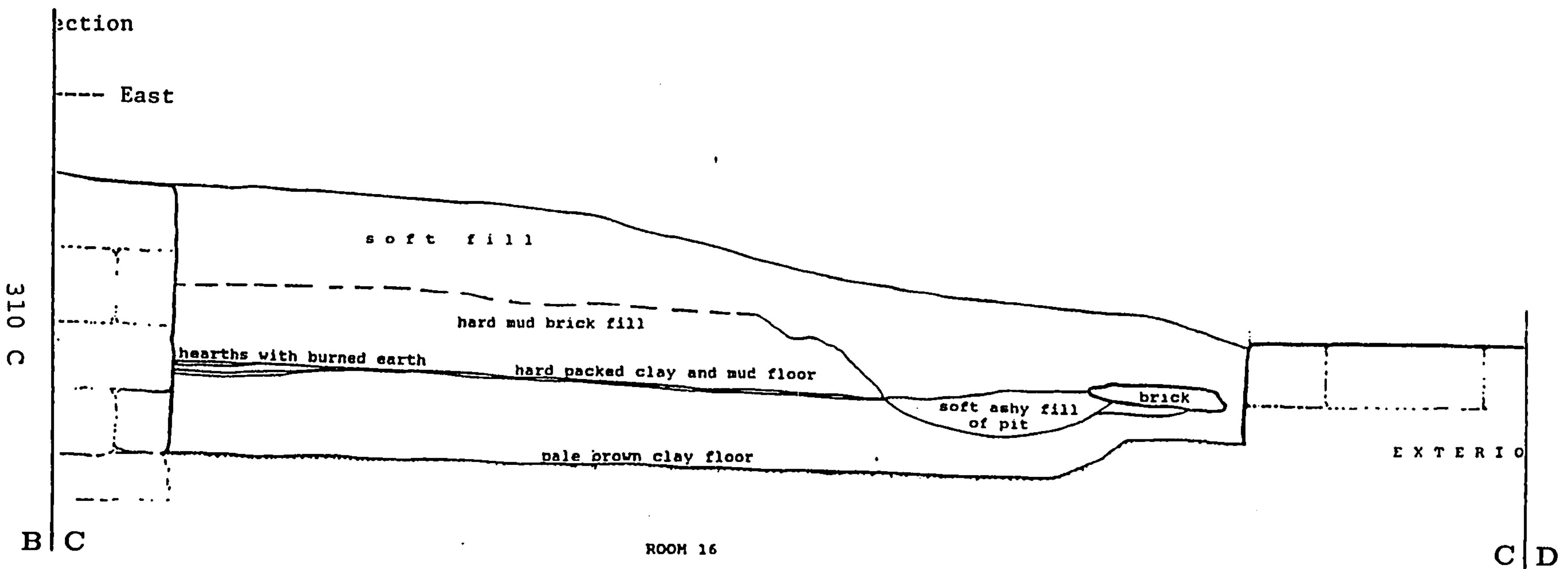




Stratigraphic section of Row 2, south section
Long section drawing, part A



Stratigraphic section of Row 2, south section
Long section drawing, part B



Stratigraphic section of Row 2, south section
Long section drawing, part C

310 D

WALL

D

C

Stratigraphic section of Row 2, south section
Long section drawing, part D

of gypsum flakes are found throughout the south mound building complex and are similar to the floor of Room 3 of the north mound domestic architecture. Floors lapped against the wall bases, i.e., the walls were not set in foundation trenches, but the floors were constructed several centimeters above the base of the walls. The absolute elevation of floors differs between adjacent rooms (such as Rooms 14 and 16) of the same phase. This is clearly shown in the section (Figure 7.6).

The typical room fill is comprised of hard mud brick fall. Ceramic sherds are scattered throughout the deposit, but are concentrated around hearths, in niches, or along the edges of rooms. Grinding stones, bone tools and whole ceramics are found clustered in certain rooms and niches where they appear to have been placed in storage before the room was abandoned.

Phase 1 Domestic architecture (Figure 7.7)

The first architectural phase was traced in all of the rooms of this row (Rooms 9-16) and in the courtyard. The floor was poorly preserved but ceramics were found *in situ* on it.

The original floor was well made with gypsum and lapped against the exterior wall. The bricks of the interior walls of the first phase were interlocked with the bricks of the exterior wall at the base. The interior walls were 50 cm wide and oriented with the north main wall rather than the

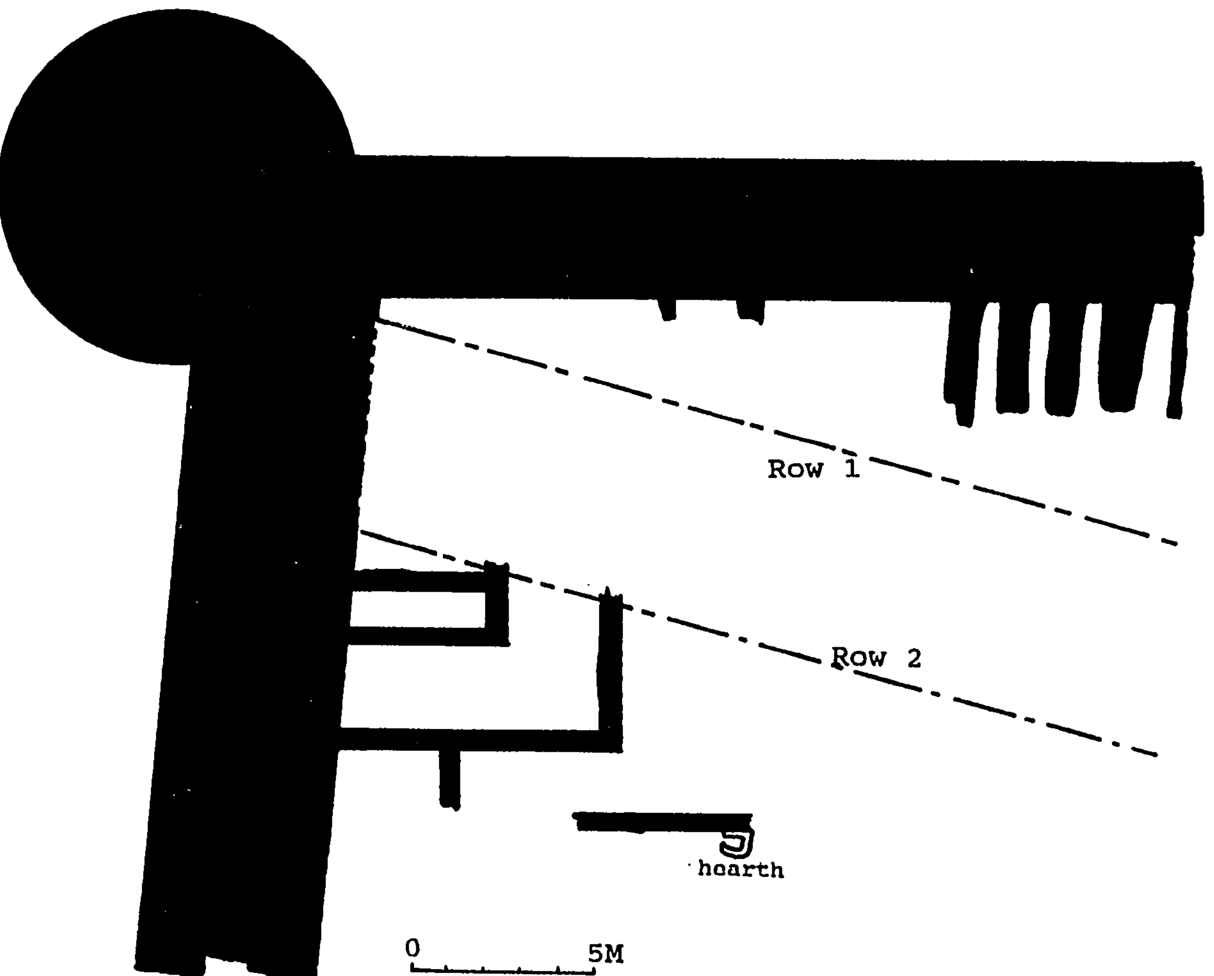


Figure 7.7: Row 2 architecture: Phase 1

nearby west main wall. In Room 16, a hearth with ceramics around it lay next to the original wall. In Room 10 was a reddened circular hearth built next to the wall, with a cache of 8 grinding slabs and a bone tube nearby. The courtyard had a tamped earth surface with several whole pots in situ. The ensemble of rooms from Row 2 gives the impression of a domestic area, similar to the Period 1 household architecture.

A micromorphological analysis of a soil sample from this type of room deposit included many phytoliths from grasses, many holes from straw, yet very little charcoal or other burnt material. It included a great amount of gypsum, probably from fallen construction material (P.Goldberg, pers. comm.). Possible sources for this material include a threshing floor or bedding for animals.

Phase 2 and 3 (Figure 7.8)

The Phase 1 interior architecture was razed and an entirely different room organization was built in Phase 2. Even the court area appears to have been leveled. The Phase 2 interior walls are thinner and were built on a well made gypsum specked floor. Multiple floors were found in some areas (such as Room 14), and on the floors were found typical domestic debris of ceramics, bones, and ashy hearths.

By Phase 3 many of the rooms appear to have fallen into disuse, many being filled with pits and midden. Others,

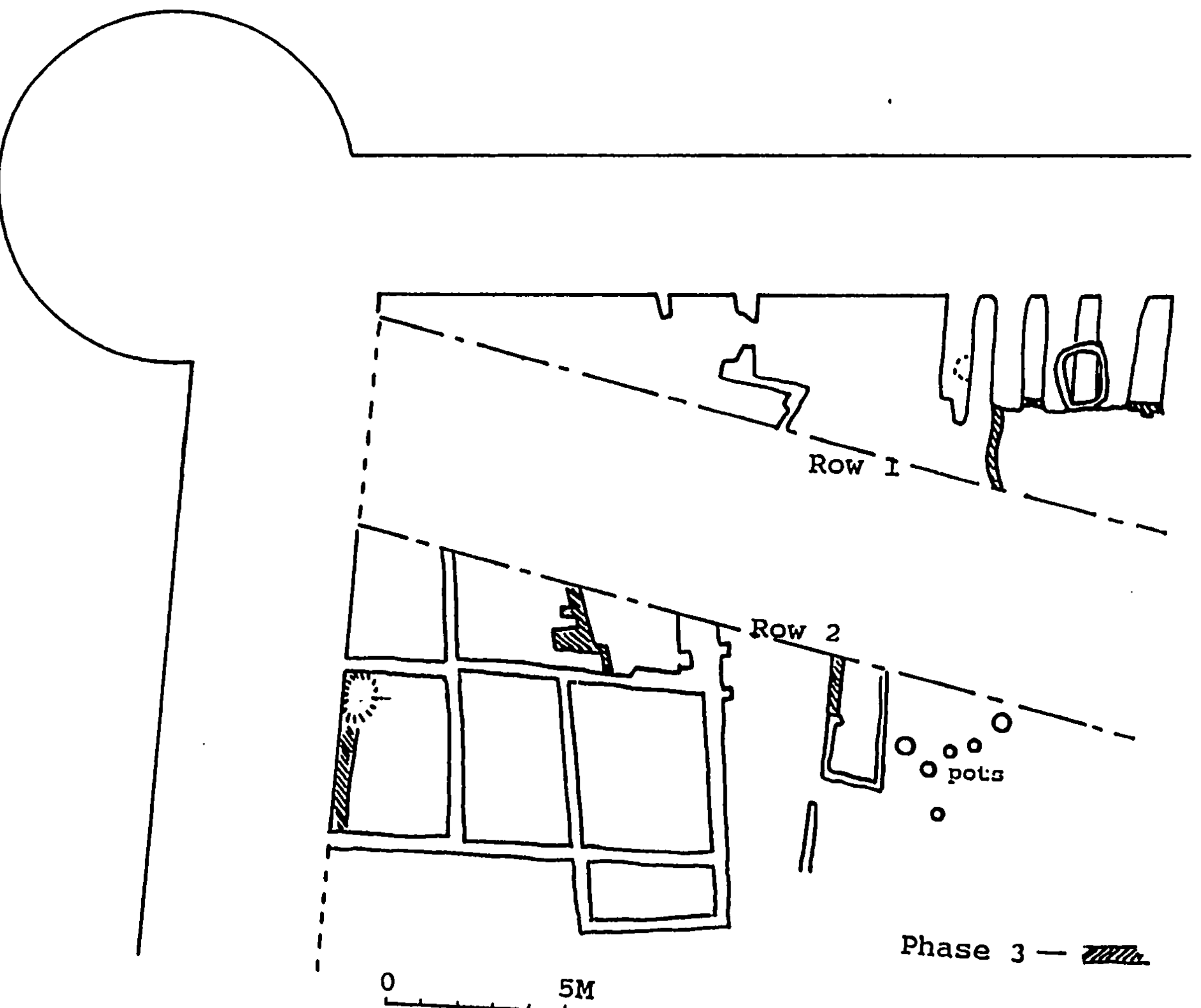
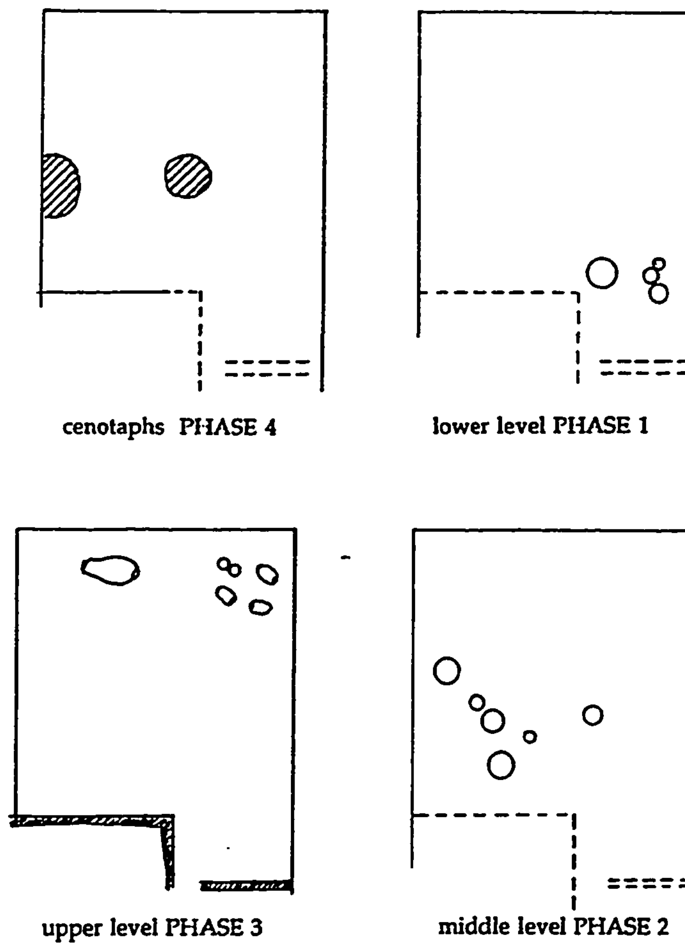


Figure 7.8: Row 2 architecture: Phases 2 and 3



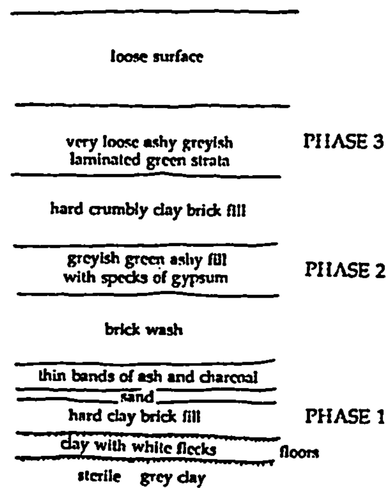


Figure 7.9: Phases and stratigraphy of the courtyard in Row 2.

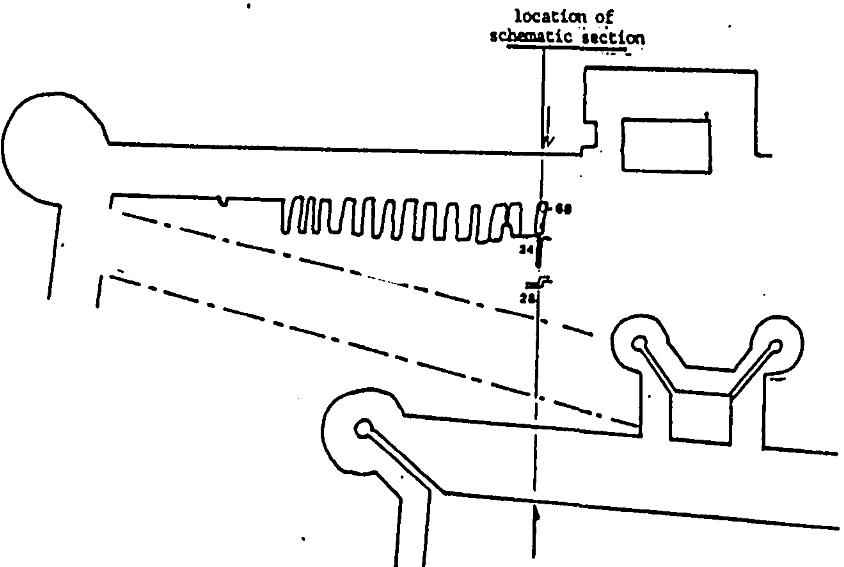
however, have upper floors, and a few rooms were divided by small ephemeral walls, clearly reusing some of the Phase 2 walls.

Unlike the room architecture, courtyards do not have seem to have changed their function from Phase 1 to Phase 3. As in Phase 1, the courtyard on the eastern side of Row 2 contained large storage jars (Figure 7.9).

In each phase at Gonur south, there is a mosaic of occupied and abandoned domestic rooms. Abandoned rooms have lenses of soft charcoally midden, similar to the upper fill of Room 14. Occasionally whole storage pots are found in these deposits. Burials, cenotaphs, and storage caches of ceramics, tools, etc. are found in these types of deposits throughout the building.

NORTH SIDE

Figure 7.10 is a schematic section north-south across Rows 1 and 2 near the square tower. were reused during the subsequent Phase 2. Most other Phase 1 walls were not used, but destroyed and rebuilt on a different plan. This section depicts the relative position of the architecture of the building complex (Phases 1-3), the burials (Phase 4), and later monumental building (Phase 5). The schematic section is based upon superimposed walls and floors noted in the pedestals left beneath upper walls and test soundings of rooms in this area.



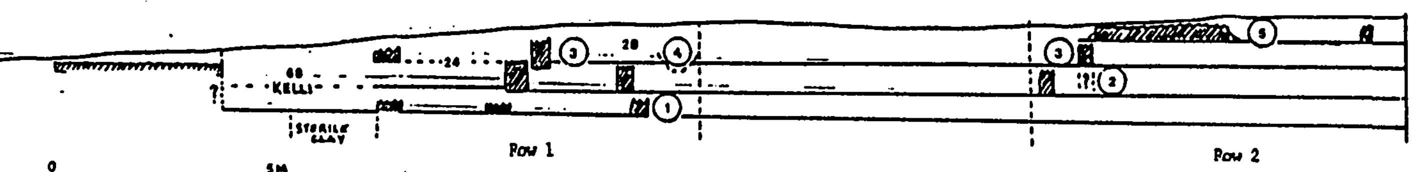


Figure 7.10: Schematic section across north side

'Kelli'

The narrow rooms (.8 x 3.5 m) which are found in rows along the northern wall at Gonur are called "kelli". There are kelli at Togolok-21 and Gonur, but at both sites the function of these rooms has been enigmatic.

Kelli (singular, kelli, plural) in Russian, means narrow long room or cell. The word's original use was for an element of monastic architecture, i.e., long narrow cells inhabited by monks. The first set of prehistoric kelli was defined at Togolok-21, where the rooms were found in long rows. These kelli were more regular than those at Gonur but less well preserved; the walls of the kelli at Togolok are 5 to 10 cm high, while the walls of the Gonur kelli are from 50 to 80 cm high. Very little more than the floor plan was known about this type of room until the excavations at Gonur. The literal interpretation of these narrow rooms as monastic cells is evident in some of Sarianidi's writings (Sarianidi 1987a for example), but as more is known about these rooms, the idea that they were actually occupied is no longer current, although the name still is used.

Excavation of a kelli

Kelli 68 is 310 x 90 cm. The original floor is preserved 50 cm beneath the present day natural surface outside of the main wall. Excavations beneath the original floor in the

south half of the room revealed that the walls and floors of the room were built on at least 10-15 cm of sterile grey clay apparently very similar to the grey clay deposit found in other sub-floor tests.

The kelli's original (Phase 1), floor was compact brown 'dirt' with an ashy grey surface; no material was found lying on the floor itself.

The Phase 2 floor was a compact brown dirt surface 3-4 cm thick with chaff and white gypsum specks; it was plastered up against and along the sides of the kelli. A whole handmade khomcha blackened by use lay several cm above the floor, and only a few sherds lay directly on this surface.

The walls of the kelli were preserved 60-65 cm above this second floor. The east and west walls were poorly preserved in the southern half of the room, where they may have been disturbed by a later pit. The kelli is blocked off to the south by a later wall (Phase 3) 15-20 cm thick, barely one brick wide (Figure 7.11). Soft bricky midden filled the kelli before it was blocked off. The upper levels were disturbed by rodent burrowing.

Some of the better preserved kelli on the eastern side, such as 69,70,71 have low arched doorways. Kelli 34,35 and 36 appear to never had access doorways. The eastern most kelli 73 and 74, are much narrower than the rest, have no doorways, and do not appear to have been ever used for

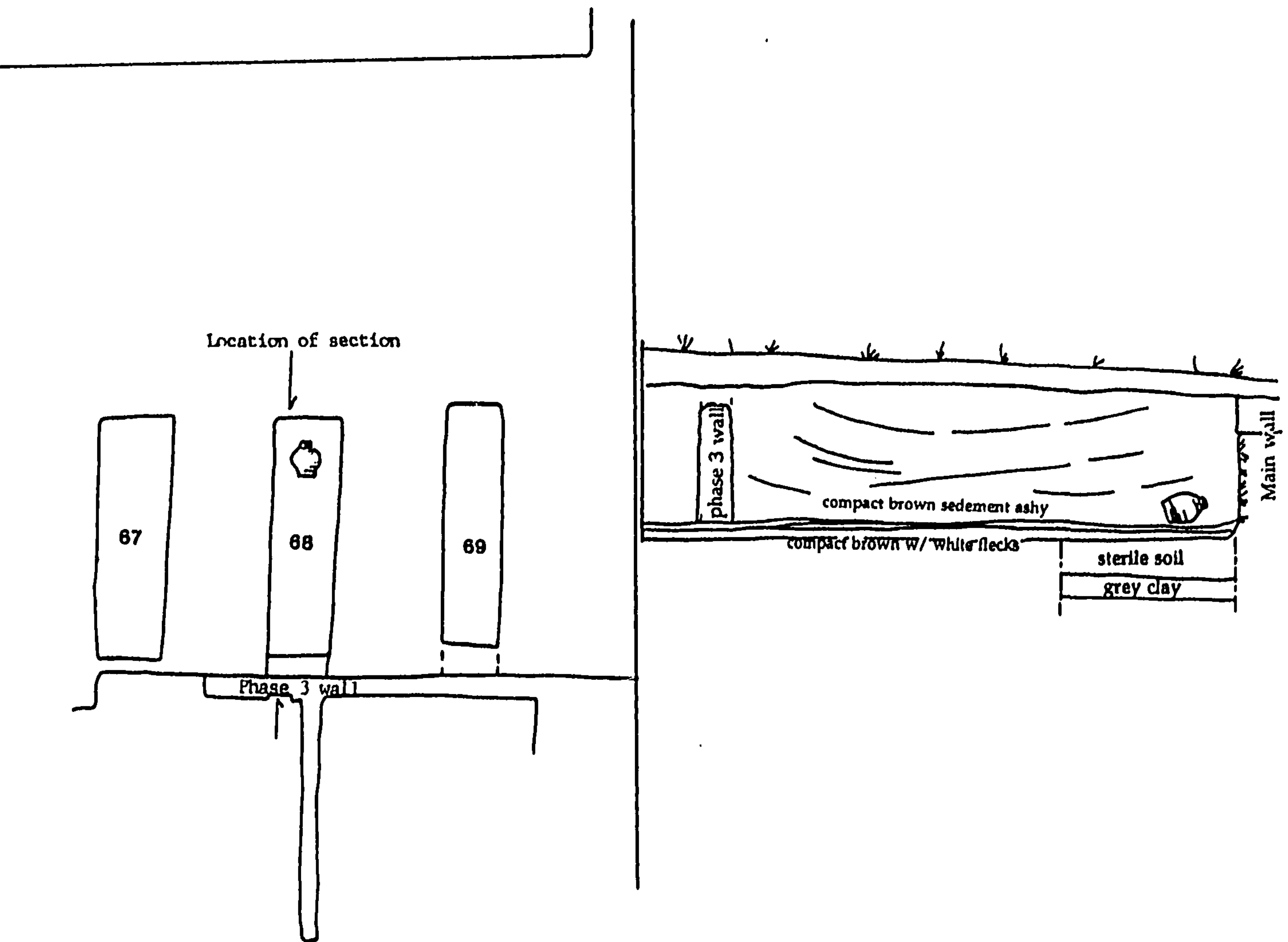


Figure 7.11: Plan and schematic section of kelli 68

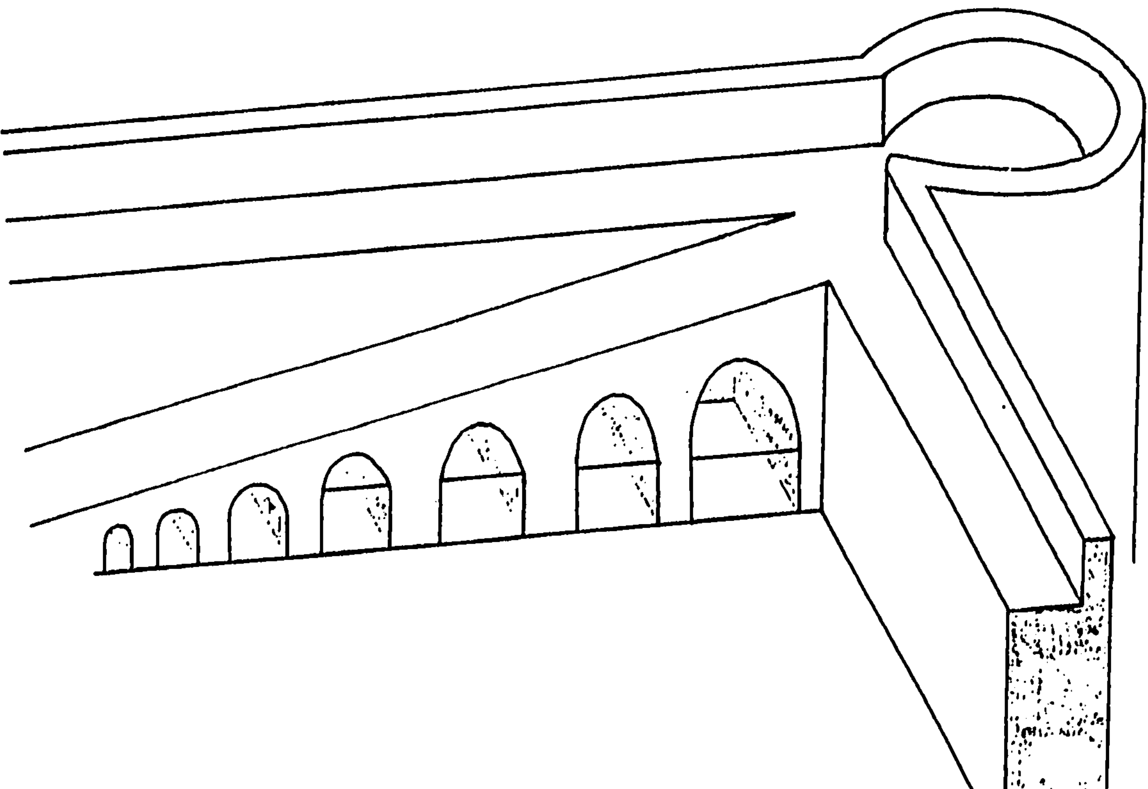
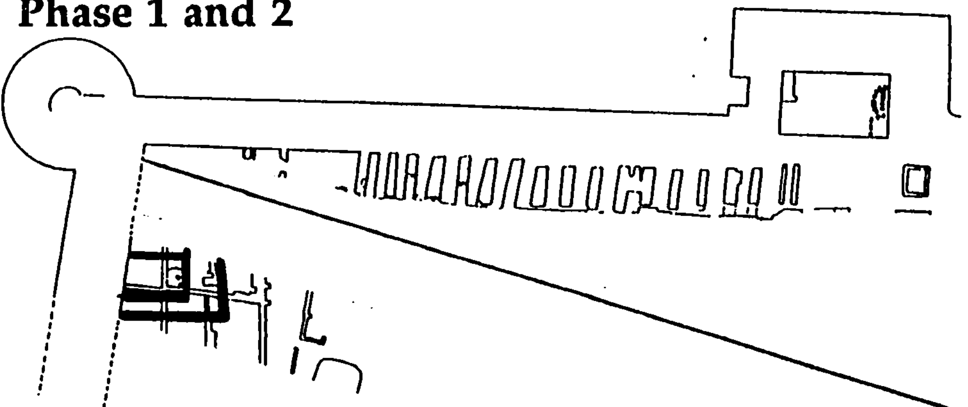


Figure 7.12: Possible reconstruction of kellis as a foundation for a ramp

storage. Many of the kelli were later re-used and incorporated into domestic areas. I suggest that the kelli were originally part of a substructure upon which upper architecture rested. The kelli were open to the interior courtyard by short doorways, no more than 50 cm tall. They all have unusually thick walls for simply architectural purposes. On the basis of the plan of the kelli, Dietrich Huff (personal communication) has suggested that the kelli were sub-structures for a ramp, allowing access to the top of the monumental exterior wall in a fashion similar to Roman forts (Figure 7.12). Such a ramp would have smaller kelli near the base end, similar to the eastern-most kelli at Gonur. The ramp would have led up to the tower on the northwest corner or to the wall. In the case of Togolok 21, the kelli would have supported an even longer ramp, leading up to the north-western central pylon. At Togolok 21, it can be envisioned that Room 114 would have served as a gatehouse or entrance for the ramp.

Architecture south of the kelli

During Phase 1 and 2, most of the kelli were open to the south towards a large courtyard (Figure 7.13a). During Phase 3, domestic structures were built in the courtyard area and several of the kelli's were modified for other uses (Figure 7.13b). The floors of the Phase 3 architecture (Rooms 8 through 28) lay upon 25-50 cm of bricky fill above the former courtyard area. Room 8, Room 20 and Room 21 form a



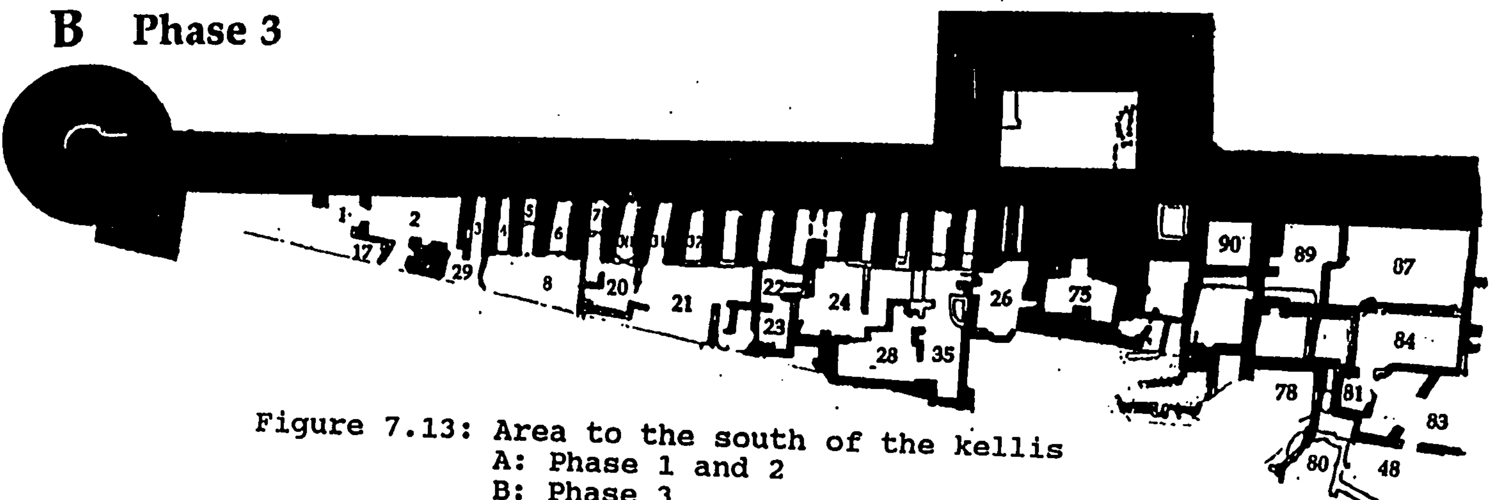


Figure 7.13: Area to the south of the kellis
A: Phase 1 and 2
B: Phase 3

typical 3-4 room unit built up against eight kelli. Most of the kelli entrances were closed off except for one in each room. Kelli 7 and 31 contained storage jars, functioning like narrow long rooms. Kelli 5 was transformed into a kiln or oven for Room 8. It appears that, by Phase 3, the superstructure or floor above some of the kelli had been destroyed.

NORTHEAST SIDE

Phase 2 architecture is built against the exterior north wall and runs underneath the later Central Building (Phase 5). The Phase 2 architecture consists of a series of large rooms connected to courtyards.

Phase 2 domestic architecture

Room 84 is a large domestic room which appears to have been roofed; it has 40 cm wide header/stretcher wall construction, a well built plastered floor, and a doorway with a 20 cm raised sill. The doorway leads to two smaller Rooms (81 and 82) with open doorways leading to a courtyard area (Room 83). The two smaller rooms had tamped earth floors and probably were not roofed.

The floor of Room 84 had been replastered once, with smooth grey mud with flakes of gypsum. The floor was well preserved over the entire room and sloped to the north (Figure 7.14).

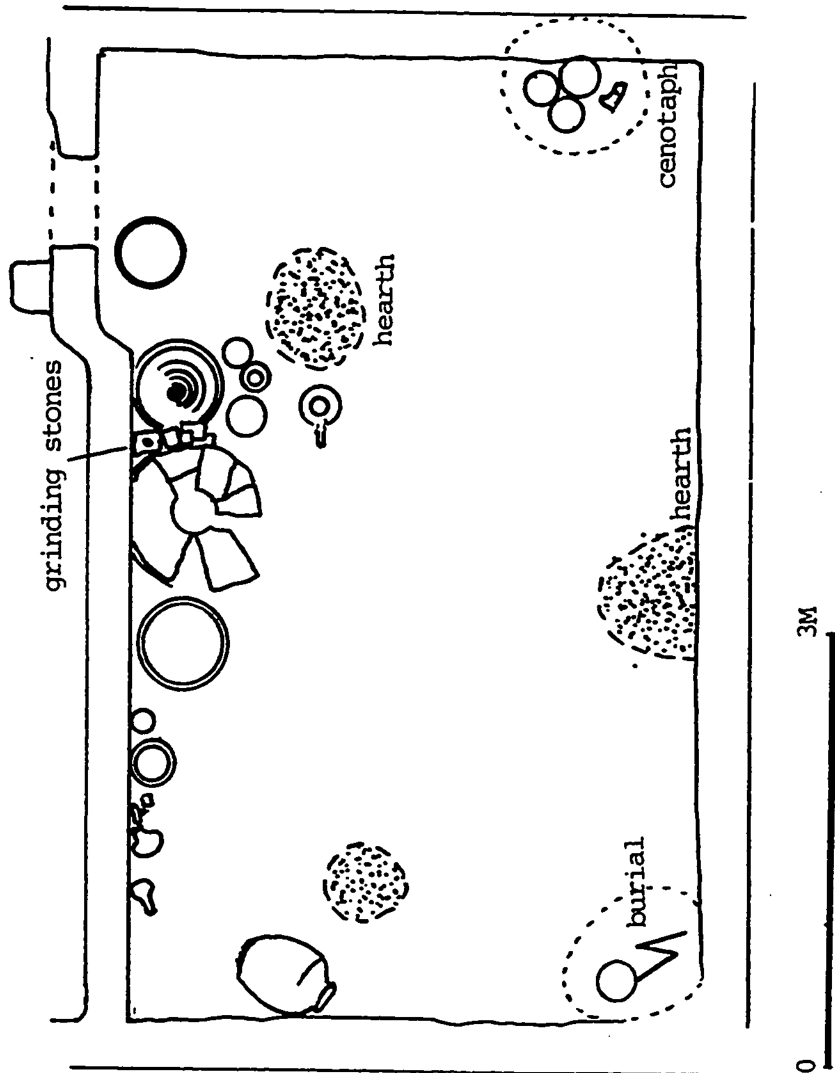


Figure 7.14: Room 84, Phase 2

Three large open conical vessels (tagora), were found along the south side of the room. Two of the large vessels were simply lying on the floor: Vessel A had several layers of plaster on the inside up to the rim; Vessel B had a large plaster plug in the base, with slight traces of plaster along the sides; Vessel C was plastered inside and outside and may have been plastered in place. Around the large pots was a cache of grinding stones including two prismatic hand grinding stones and eight slab grinding stones (some longer than 40 cm), and three smaller pounding stones, finer than the grinding slabs. Smaller closed vessels on the floor include small spouted bowls (type 1.B.6), egg-shaped cups (type 1.B.5), and a bottle with a wide shoulder and small base (type 1.B.4). Against the wall was a khomcha. All of these vessels appear to have been used together, and all of them appear to have been involved in the processing which involved the tagoras. No such large vessels were found in the domestic architecture of Period 1 from the north mound.

The upper fill (Phase 3) was very bricky and contained crushed ceramic vessels. The room appears to have been used as a dump after the room fell out of use. Some of the pots were filled with hearth and courtyard sweepings during the later dumping. In the northeast corner, an infant was buried into the Phase 3 deposit without any preserved burial objects. In the same deposit (in the northeast corner) was a small group of pots and a worked bone object in the form of

an axe. This group of objects appears to have been a small cenotaph most likely associated with the infant burial.

Comments concerning domestic architecture

We have evidence for continuity of domestic occupation at Gonur south, from its initial construction (Row 2), into its second phase (Room 84 complex), and into the upper level, Phase 3 (Room 8 complex). While there is a shifting of function and construction within the building complex, the overall function of the building appears to have included domestic residences throughout its occupation. A similar mosaic of occupation may have also occurred at the other BMAC sites of Togolok 21 and Togolok 1, where occupational deposits, middens, and burials were found within the building complex.

WEST SIDE- ROWS 3-8

During the first period of occupation in Margiana (Gonur north, Kelleli 3 and Kelleli 4), production appears to have been limited to domestic scale and there is no evidence that it was carried out in large production like in the contemporary foothill sites.

In the architecture of Period 2 in Margiana, (Gonur south, Togolok 21 and Togolok 1) large scale storage and production occurred within the building complex in special rooms and areas, and new architectural forms reflect this. These include: communal spaces dedicated to storage or

production and specialized features such as heavily plastered vessels, kilns, and fire-pits.

At Gonur south, these features are best documented on the west side where both domestic areas and large scale production/storage areas are found.

Phase 1

It is possible to trace several interconnected rooms leading to courts and alleyways in a pattern similar to that of Phase 1 architecture in Row 2 (Figure 7.15). For example, Room 37 (Row 3), is a large room with a hearth, a large storage vessel buried under the wall near the west wall, and a plastered reed basket on the floor. It appears to have been a room of a domestic area. This room is connected by a doorway with a doorsill to Courtyard 36. A straight alleyway connects two courtyards (Room 36 in Row 3 and Room 63 in Row 4). Courtyard areas have tamped earth floors with ashy midden deposits. In Phase 2 of this courtyard (Room 36) were large fragments of several podstavki (potstands).

Phase 1 rooms were poorly preserved along the western side of the building complex. A stratigraphic section in Row 3 shows that the original walls were razed by later occupations (see Figure 7.16).

Large rooms were uncovered in 1990 along the east side of Rows 5, 6 and 7, which were part of the original building complex. While some of the original walls were reused in Phase 2 rooms, the south side appears to have been mostly

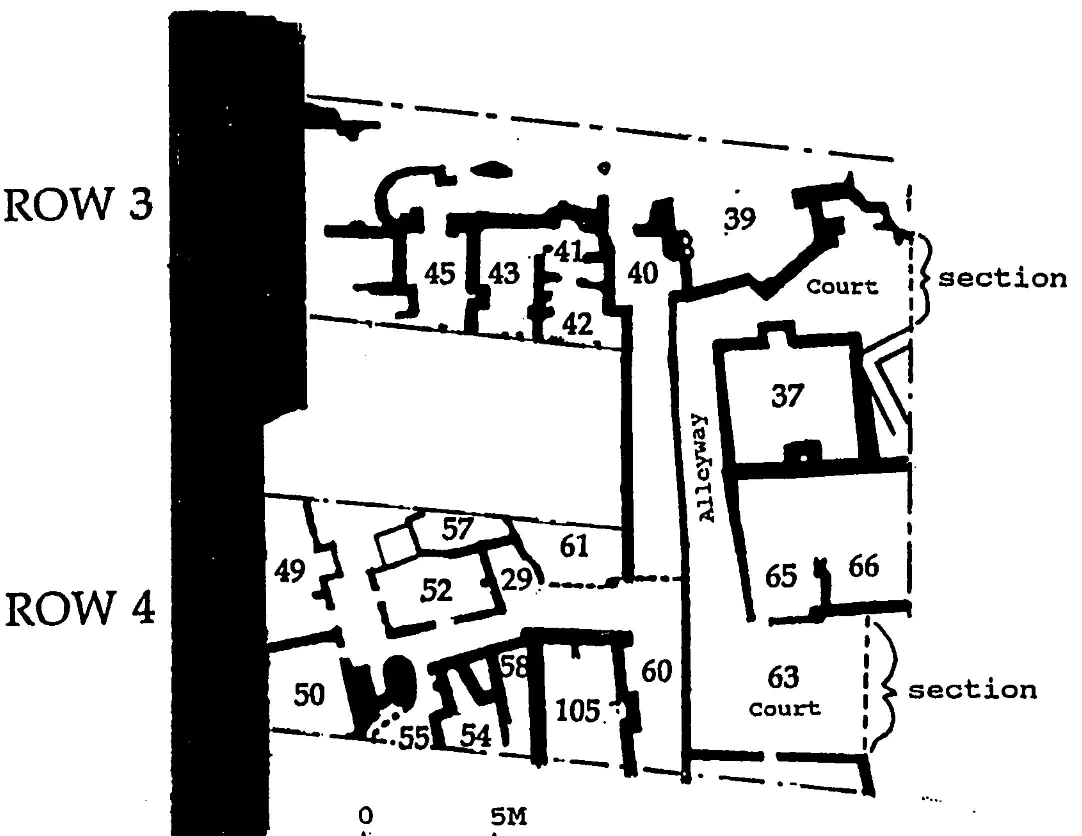


Figure 7.15: Rows 3-8, locations of sections indicated

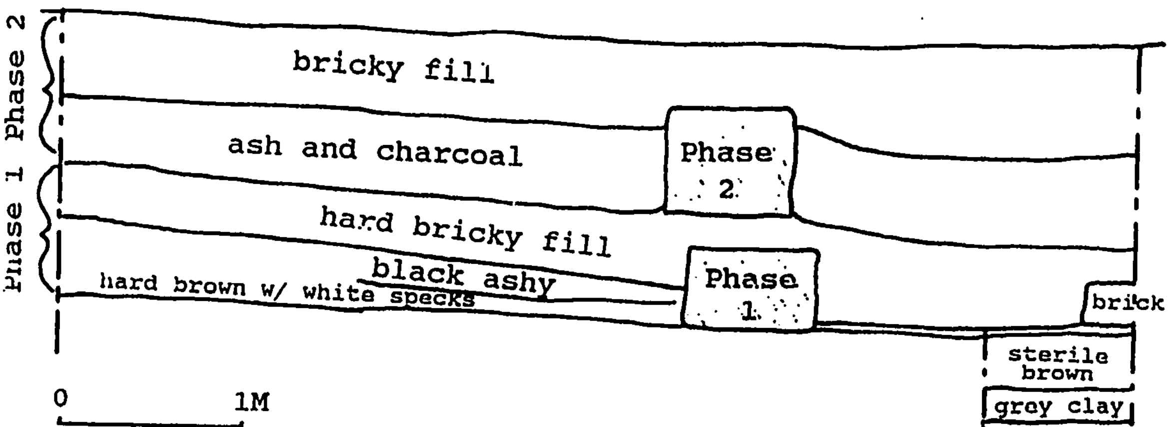


Figure 7.16: Row 3, Room 36, section

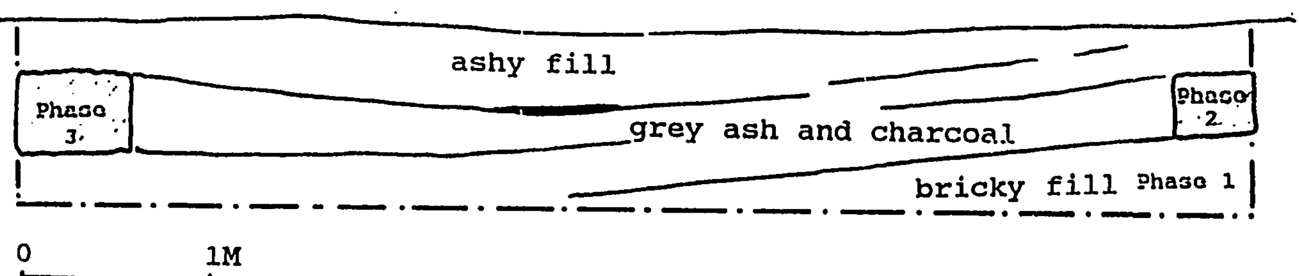


Figure 7.17: Row 4, Room 63, section

leveled prior to rebuilding in Phase 2.

Phases 2 and 3

Most of the preserved architecture on the west side is Phase 2 with Phase 3 modifications. A stratigraphic section in Row 4 across a courtyard area demonstrates the Phase 2 and 3 stratigraphic relationships in this area (Figure 7.17). Like the Phase 1 architecture, these phases are characterized by courtyards, room groups and alleyways.

Khom khana: Room 52

Room 52 (Row 2) is isolated from the rest of the architecture of Phase 2 in this area in that it is not part of a multi-room complex (Figure 7.18). Its function appears to have been a communal storage area not associated with one particular household. It is surrounded on two sides by an alleyway, and the room opens through two doorways with 15-20 cm tall doorsills on the west and the south sides. A platform to the north of the room seems to have been a later (Phase 3) feature. The room may have been part of an earlier ground plan but we did not find an earlier floor. The 25-30 cm (one brick wide) walls were built together with the other Phase 2 walls. The room had a pilaster to support a roof, and 80 cm of room fill consisting mostly of brick fall.

On the east side of the room is a platform 15-20 cm above the floor which contained two or three rows of

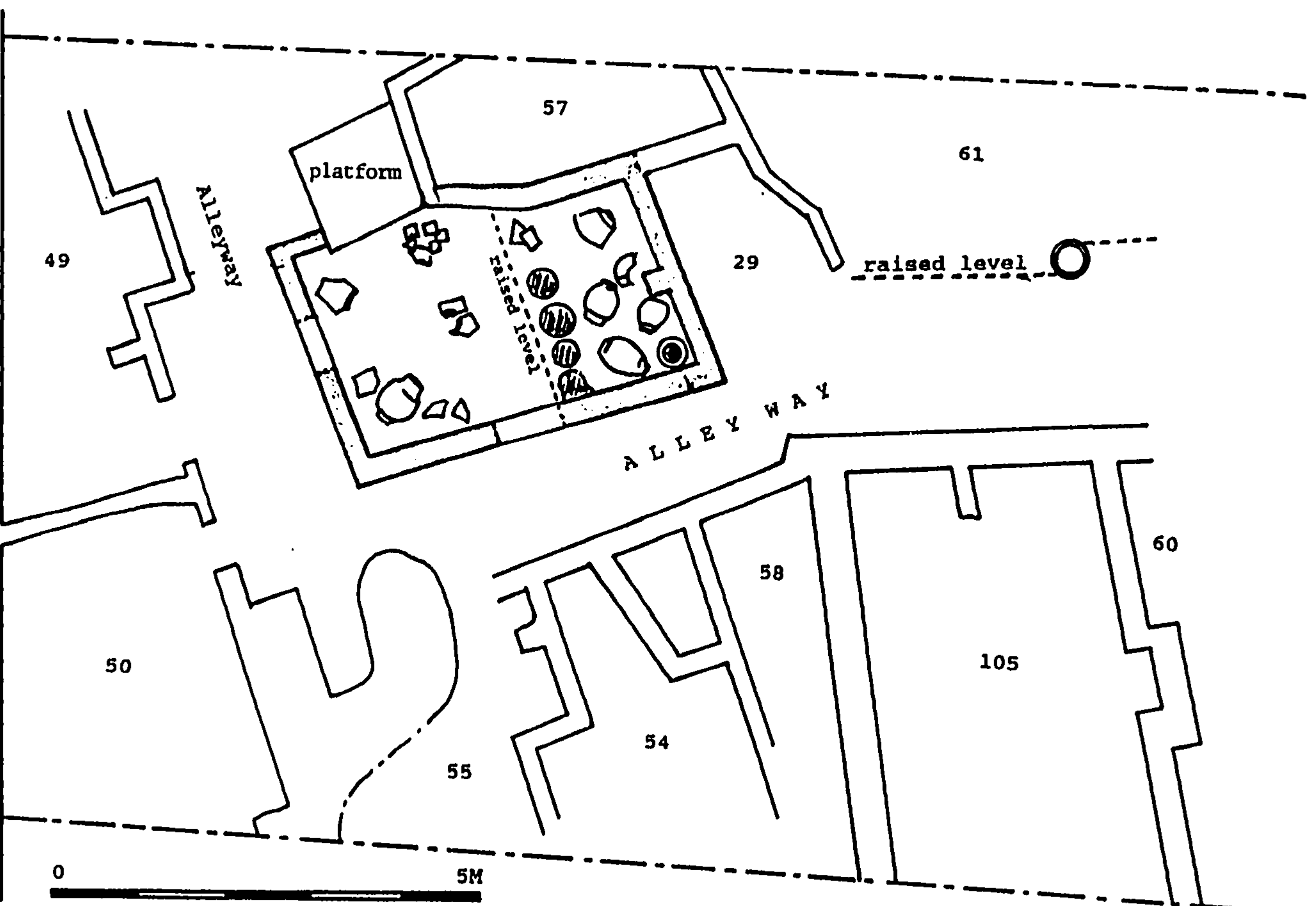


Figure 7.18: Row 4, Room 52, Phase 2 'KHOM KHANA'

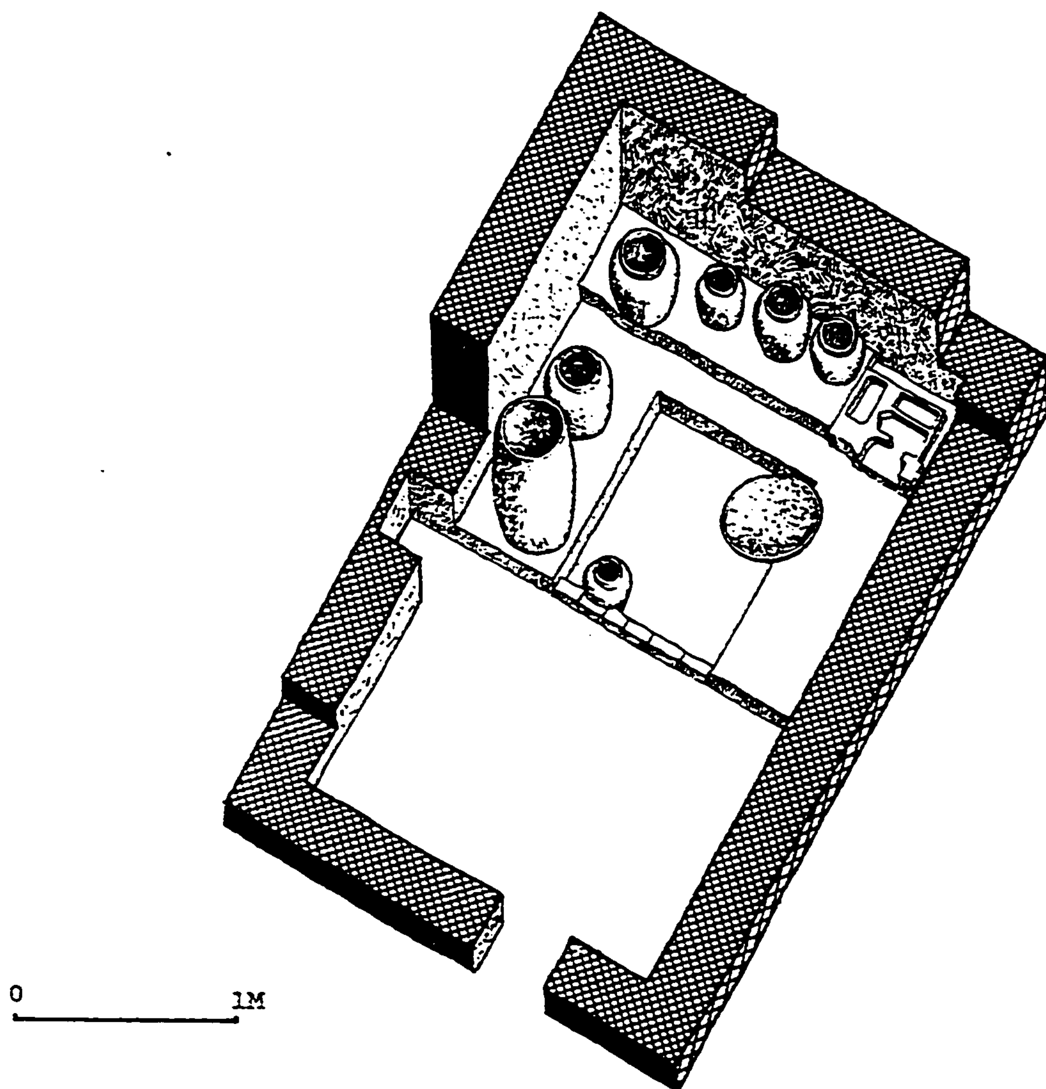


Figure 7.19: Togolok 21, Room 34- 'haoma' preparation room
Sarianidi 1990:fig `20

circular shallow pits. The pits are lined with clay and contained a few sherds and brick fragments. Six large storage jars khoms were sitting on or above the platform bench. On the west side of the room were some large broken fragments of khoms which were sitting on, or just above, the floor.

Rooms with benches and khom storage areas or khom khanas can be compared to Room 34 at Togolok-21, the "haoma production area" (Figure 7.19). This room is an example of a production/storage facility within the architectural complex not found in the earlier period in the Margiana oases.

Plastered baskets and vessels

Baskets plastered with white gypsum were found in many rooms along the west and north sides and are known from all phases (Rooms 2, 15, 37, 137, among others). Plastered reed baskets are also found at contemporary sites in southern Bactria. They were common at Dashli 3, although not mentioned in the reports (Sarianidi, pers. comm).

For example, a plastered basket was found at Gonur south on the floor in Room 37 (Phase 1). It is an open basket estimated to be 1 m in diameter and 50 cm deep, lying on its side and slightly folded over on itself. The plaster is thick inside and out and thickly covers the rim. Seven layers of replastering could be seen.

The baskets were covered with plaster apparently in order to make them waterproof. With the abundant and well

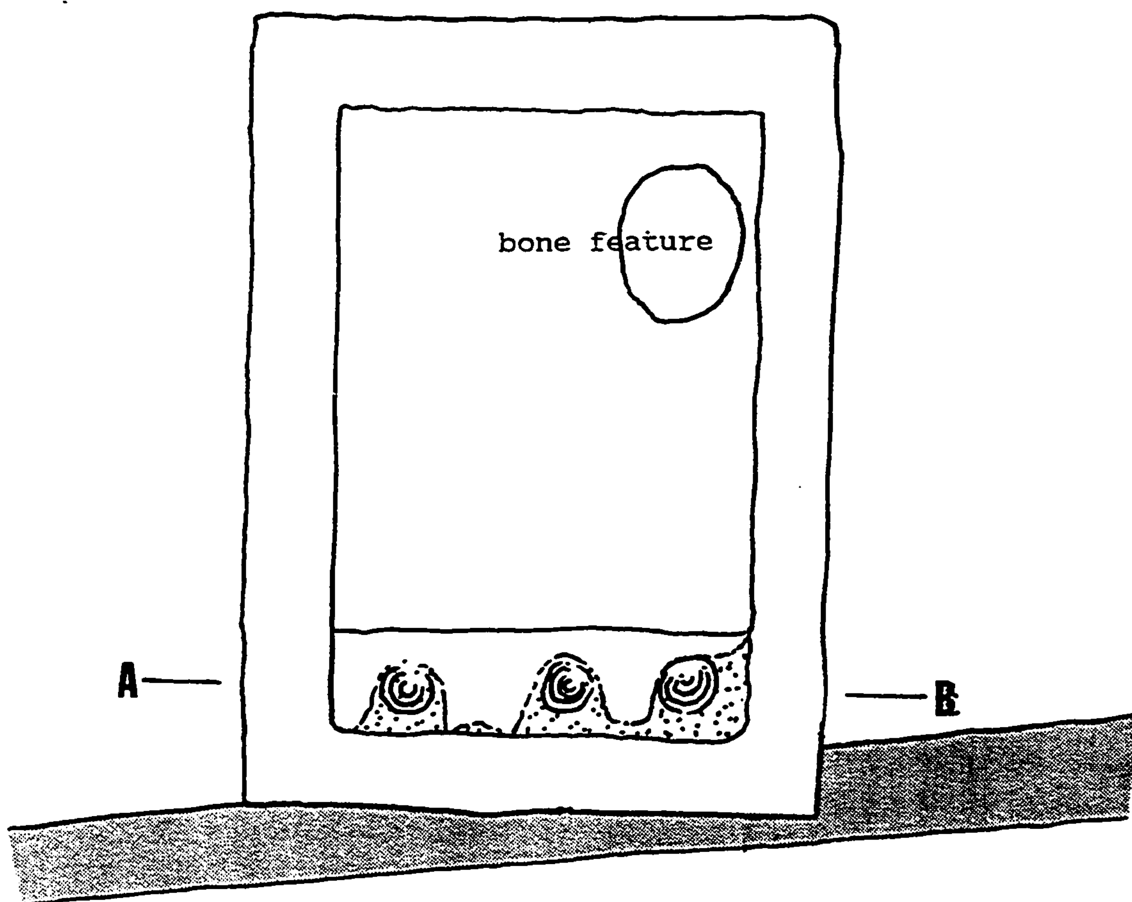
made ceramics from Gonur it was surprising to find plaster covered reed baskets. Equally surprising was to find many white plastered ceramic vessels, such as two pots in Room 8 coated inside and out with white plaster.

The plastered baskets and vessels may be for specialized storage or production. While some of these vessels are found in domestic areas (Room 37), others are found in rooms used for large scale production or storage (Room 137).

Rooms such as Room 137 containing plastered vessels appear to have been for specialized production (Figure 7.20). The room has 40 cm thick walls and a well preserved floor, suggesting that it was roofed although no doorsills were located. The floor was plastered with white gypsum and sloped to the west towards three thickly plastered vessel bases beneath the floor. This arrangement is similar to architecture from southern Iraq and the Arabian Gulf area where dates were laid in specially plastered rooms and the date juice dripped into basins at one end of the room (Rougeulle 1986). Although there is no evidence for dates in Margiana (Miller 1991), Room 137 appears to have been for a similar type of production.

Plaster

White gypsum plaster is a common construction material incorporated into the standard floors. Several rooms had white plastered floors (as opposed to fragments of plaster



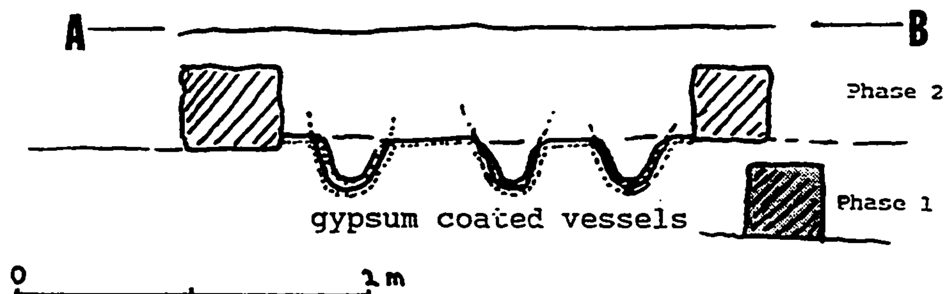


Figure 7.20: Row 7, Room 137. Room has slightly sloping plastered floor with three plastered vessels set into the floor at the low end.

in the flooring), such as Room 105 (Row 4) (see Figure 7.18).

Many of the rooms of the northwest quarter of the central building at Togolok 21 have white plastered floors. The difference between the plastered floors and the clayey earth floors has been suggested to reflect the difference between ceremonial (paradnii) and domestic areas. At Gonur, plastered floors are found in domestic room complexes, in production/storage areas, and in 'ceremonial' areas.

A sample of the white plaster from Gonur was analyzed. It is composed of Calcium sulphate ($CaSO_4$), indicating that the sample was a gypsum plaster (R.Tykot, pers. comm.). Gypsum is a naturally forming mineral common in water-lain pans such as takyr (Dietrich and Skinner 1979). Gypsum would have been an abundant local resource surrounding the Murgab delta. The production of gypsum plaster requires firing at a low temperature (150-200 degrees C) and can be produced in an open pit (Kingery, Vandiver, and Prickett 1988). The excavated Period 2 sites in Margiana and Bactria have plastered floors and vessels; however, the kilns for producing the plaster have not yet been identified.

Kilns

Ceramics kilns are found in the building complex of Gonur south along the west and south side. Most of the kilns are intrusive into Phase 1 and 2 architectural deposits. For example, kilns in Rows 6 and 7 which are

associated with Phase 3 architecture are dug into the earlier room fill.

The kiln in Row 6 (near Room 206) is a small, rectangular, two chambered kiln, typical of the late Bronze Age of the foothill zone and of Margiana (Sarianidi 1957, Masimov 1976). It was set 1.5 meters into the earlier deposit with burned brick scattered on the surface (Figure 7.21). Room 206 immediately to the north had a series of unbaked bowl fragments preserved on the floor, apparently ready to be fired at the time they were abandoned. These unbaked ceramics with typical BMAC type forms were found by the excavators in the 1990 season and can only be mentioned as I have not studied them. Typical of ceramic production in Margiana, no misfired ceramics were found around the kiln.

Kiln areas are found in several other areas on the west and south side of the building complex. Surrounding the site of Gonur to the west and to the north are scatters of similar kilns which are dated to either Period 1 or Period 2, based on the associated ceramics.

Fire-pits

Other highly fired features are found along the south side of Gonur south. Fire pits are rectangular brick-lined chambers built beneath the floor surface. They occur in rows from two to five chambers long and have indications of very intense heat. Fire pits are found along the west exterior wall and along the south exterior wall (Row 8). It

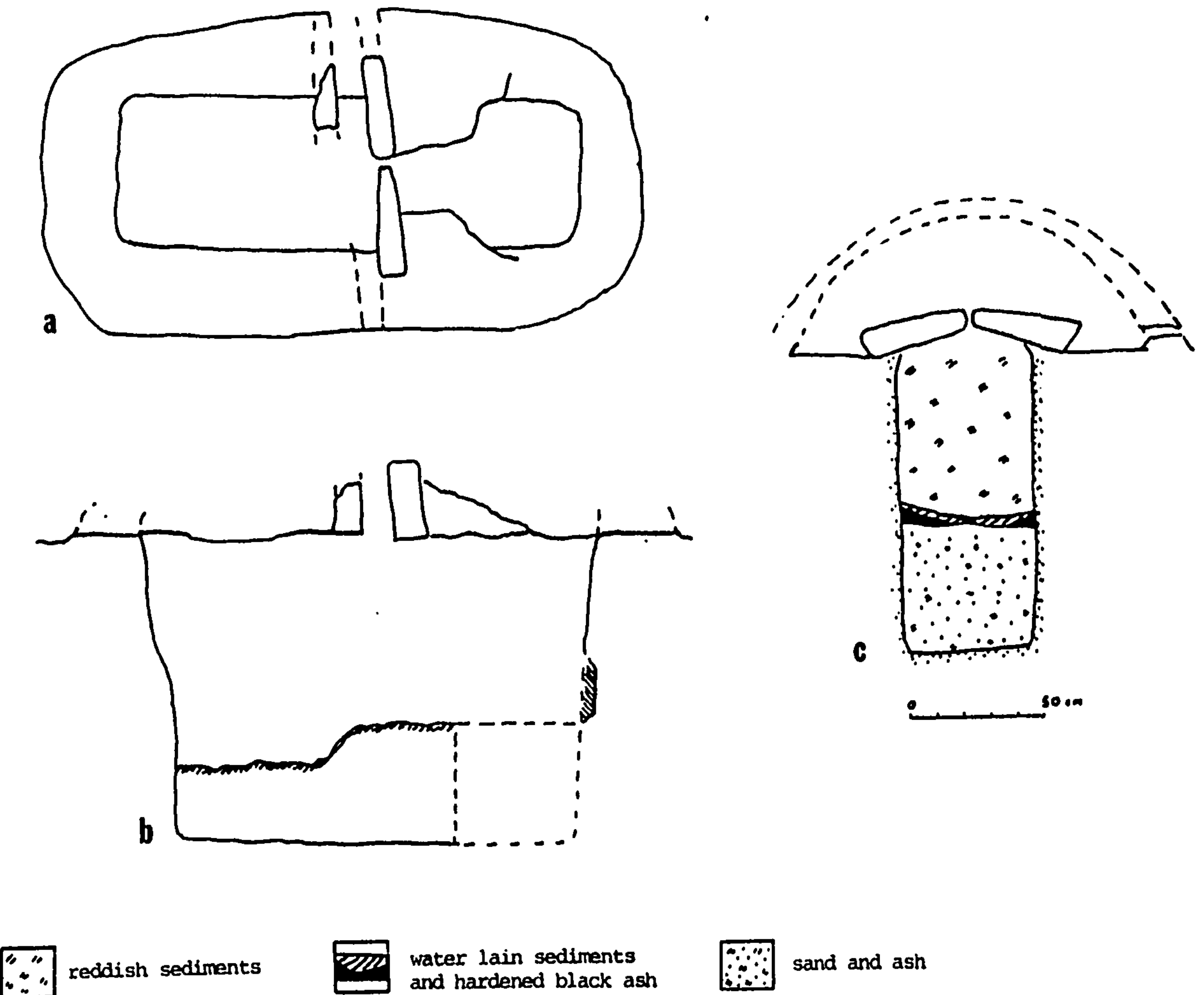


Figure 7.21: Row 6, ceramic kiln
A:top plan
B and C: sections

is unclear during what phase of occupation these pits were constructed and used. Similar fire pits (a row of five chambers) were found at Togolok 21 along the north west exterior wall. In both cases, they appear to be located apart from the room complexes, in open areas. No analogous features are found in the earlier Margiana architecture or in the architecture of the foothill zone. Similar chambers from the Djarkutan 'temple,' a contemporary site in northern Bactria, are associated with metal production (Askarov and Shirinov nd). However, it is unclear what the purpose of the fire-pits at Gonur or Togolok was since no slag, burned debris, or unfinished materials were found in or near to them.

The location of the fire pits at Togolok 21 in the corner wing of the building complex, opposite a "ritual area", suggests to Sarianidi that these had ritual function, parallel to altar rooms located in the corner wings of later Zoroastrian temples, such as the Oxus temple (Sarianidi 1990).

Semi-finished artifacts

There appears to have been some stoneworking at Gonur south on the southwest side. A worked steatite block with a depression pecked into it was found along the south exterior wall. While unfinished pieces of steatite have yet to be found together with debitage and tools for working the stone at Gonur south, rooms with similar partly finished steatite

and tools have been found at Togolok 21 (Room 148).

At Gonur, fragments of melted copper and a copper-alloy ingot come from Room 185, in the room complex along the east side of Rows 5,6 and 7 excavated in 1990.

It is possible that metal casting, plaster production and stoneworking is occurred within the Period 2 building complexes of Gonur south, Togolok 21, and Togolok 1. Ceramic production is documented within the building complex at least in the later phases of occupation.

Burials and cenotaphs (Phase 4)

The building complexes of Period 2 such as Togolok 21, Togolok 1, and Gonur south include abandoned areas which served as areas for dumping and for burials. The burials and cenotaphs are contemporary with Phases 1-3 in the south mound building complex.

Cenotaphs are groups of ceramics and small artifacts which serve as burial offerings without any human remains. In Margiana, I suggest that they occur together with a nearby burial. At Gonur there are several instances of burials with cenotaphs from 5 to 15 meters away. For example, from Room 84 (north side), an infant burial and a cenotaph were interred in the same room. This pattern appears to be found in other BMAC burials in northern Bactria (Djarkutan); BMAC burials outside of Central Asia such as at Shahdad, Khurab, Sibri, Mehrgarh VIII, and the Quetta 'hoard' also follow this pattern (Hiebert and

Lamberg-Karlovsky 1992).

Two types of Period 2 burials are found at Gonur: burials with tombs made of mudbrick containing 10-20 vessels, elite artifacts and food offerings; and burials of individuals without constructed graves, usually with few if any burial goods. Both appear to have cenotaphs associated with them.

By 1989, more than 40 burials and cenotaphs had been excavated from Gonur. Most of the cenotaphs from midden contexts in the building complex at Gonur south did not contain exotic goods. The cenotaph in Room 84 had a copy of an axe, made out of the bone of a large mammal. From Row 8, a cenotaph consisted of a spouted 'ritual' vessel and the remains of an upper fore and hindlimb of a cow or bull. These cenotaphs were found in the vicinity of graves of individuals which were shallowly dug into room midden in the south mound building complex.

A rich cenotaph was interred on the south side of the building complex, in the courtyard near the three fire-pits. No burial has been found near it. This cenotaph consisted of 8 small pots, some with incised pottery marks inside. A bronze axehead in a zoomorphic shape with a (poorly preserved) wooden handle and wrapped in woolen cloth was found near the ceramics. While the cenotaph was built in the courtyard, it could not have been buried long after that particular area was occupied, based upon a comparison of its

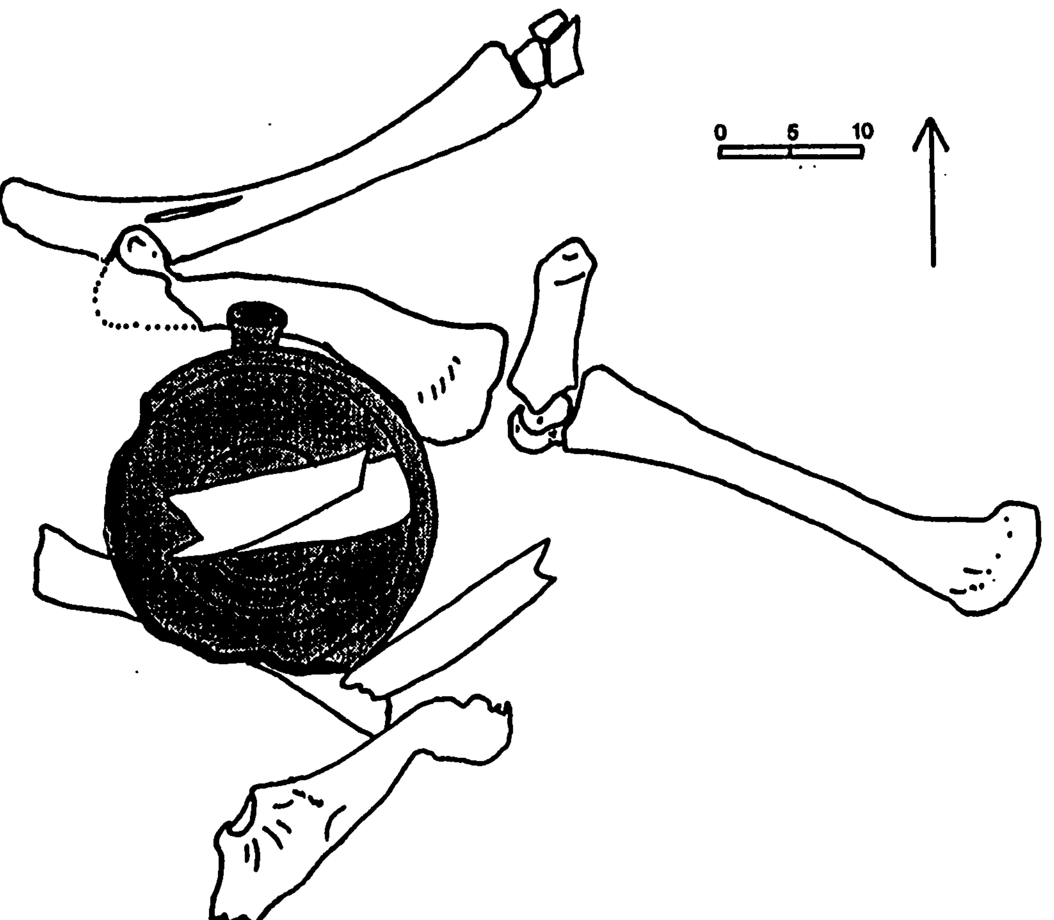


Figure 7.22: Row 8, cenotaph consisting of one ceramic vessel and articulated bovid bones.

Figure 7.23: Cenotaph 41, Gonur south.

1. Type 3.B.4, Red, med. fine chaff, finger molded rim.

2. Type 1.A.4, Reddish buff, Med fine chaff, incised decor.

3. Type 1.A.4, Reddish buff, Med fine chaff, incised decor.

4. Type 1.A.4, Reddish buff, Med fine chaff, incised decor.

5. Type 1.A.4, Red, Med fine chaff.

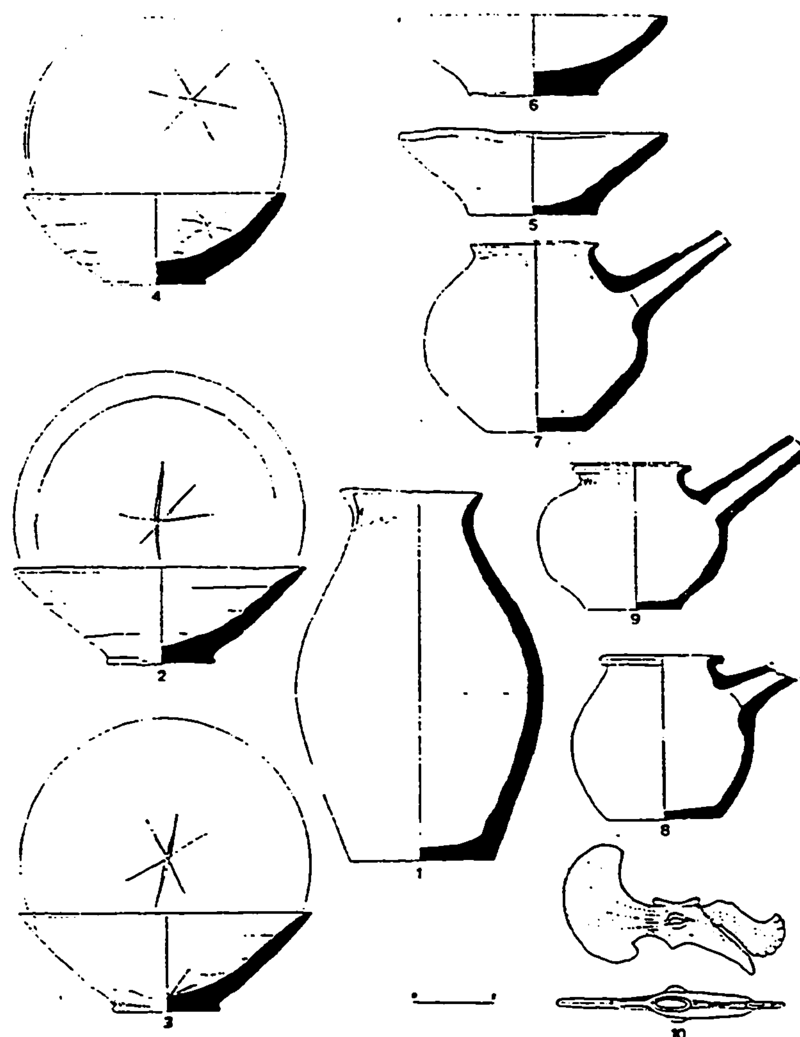
6. Type 1.A.4, Reddish buff, Med fine chaff.

7. Type 1.B.6, Red, Med fine chaff.

8. Type 1.B.6, Reddish buff, Med fine chaff.

9. Type 1.B.6, Red, Med fine chaff.

10. Shaft hole axe, 14 cm long. The blade is 7 cm tall, 5 cm long and 0.6 cm thick. 196 g. The shaft hole is oval, decorated with a raised eye motif on both sides. Beneath the eye motif is a small hole which would have allowed the head to be attached to the wooden shaft. Traces of wool fabric were adhering to the back of the axe.



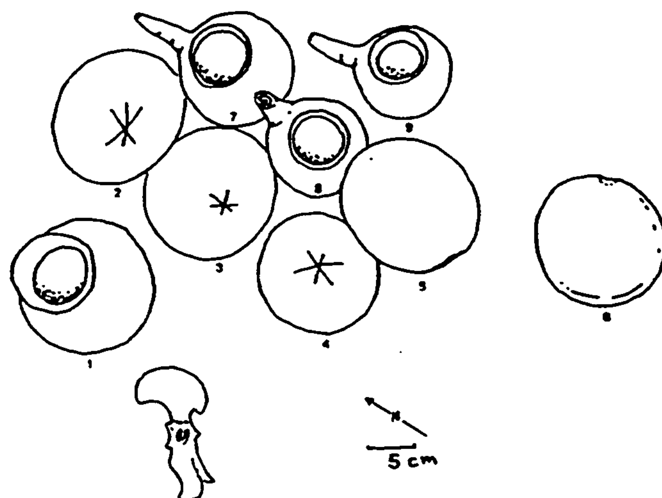


Figure 7.23: Row 8, cenotaph (#41) consisting of nine ceramic vessels, and bronze axe.

ceramics with those from the occupational levels in the building.

CONCLUSIONS

Fortified self contained settlements are first found in the initial widespread occupation of Margiana, i.e.at Kelleli 3 and 4 and the kremel at Gonur north. The architecture developed in the second period, where the complexes are completely self contained including production within the building complex itself.

When the monumental buildings of the BMAC were first excavated (Sarianidi 1977, Askarov 1977), well planned enclosed building complexes were unknown from Bronze Age Central Asia. These buildings were unlike any Bronze Age architecture of the Kopet dag foothill zone and were originally interpreted as temples or ritual architecture (Sarianidi 1977, Askarov 1977).

It is now clear that these are typical of, rather than the exception to, Margiana and Bactrian architecture. For example, the Djarkutan 'temple' has an alleyway, courtyard, multi-room complex, wall hearths with chimneys, and zakladka courtyard. Surrounded by the massive wall, this building appears to be a typical BMAC occupation compound rather than a building dedicated to ritual.

The features characteristic of Period 2 described from Gonur south are found at all of the contemporary settlements

of Margiana and Bactria. The Bactrian sites of Sapalli, Dashli 1, and Dashli 3 have doubled exterior walls; Gonur south and Togolok 21 may have these as well. They all have domestic areas, communal production/storage areas, and abandoned areas with middens and burials.

The exception to the architectural pattern in Bactria and Margiana is Togolok 21. While it has many features of habitation and production similar to Gonur south, Togolok 21 has some important contrasts as well. The main building has domestic architecture only in its northeast corner. The other areas have apparently roofed interconnected rooms and almost no hearths built into the walls; thus they do not appear to be domestic areas. While our interpretation of Togolok 21 is limited by the excavation methods used, the central building at Togolok 21 appears to have been an 'elite' area such as a large citadel or 'ark', similar to the huge Parthian period citadel "Gyuar kala" in Margiana.

At Gonur south, the building complex appears to have been abandoned suddenly at the end of the BMAC. Valuable grinding stones are found in the upper levels, unbaked ceramics lay near pottery kilns, and storage areas have large khoms still in place. Similar situations appear to be the case at Togolok 21 and Togolok 1, where there is no occupation following the Period 2 (BMAC) occupations.

There is no evidence of continuity of population from the Bronze Age of Margiana to the later classical and

medieval occupations in Margiana. However, there appears to be a strong environmental factor which dictates the type of economy and thus the kinds of architectural forms found in the oasis. This has led to a relatively conservative form of settlement which, once established, has remained stable from its origin through the development of the traditional qala.

Continuity of the Margiana architectural pattern of the fortified isolated building complex or qala is seen in Iron Age oasis architecture, for example, from Tillya tepe in Afghanistan and at the site of Garri-kyariz I from the desert north of the Kopet dag mountains in the region of Ashkhabad (Pilipko 1984). At Gonur south, the Central Building (Phase 5), built upon the abandoned BMAC building complex, also follows the qala pattern.

The influence of Central Asian qala architecture on large Parthian fortified buildings stretched from classical Bactria to the Persian Gulf. Later qala buildings were transformed into entrepots for trade called caravansari. The caravansari form of architecture was not borrowed from the Romans or Syrians; rather it was an adaptation of the typical oasis architecture first developed in Bronze Age Central Asia.

CHAPTER 8

THE DOMESTIC ECONOMY OF GONUR DEPE

One of the most dramatic differences between the foothill zone and the desert oases is in the subsistence and resource bases of the two areas. In both, the planting and harvesting of crops is dependant upon the period of flooding of the rivers--more so than on seasonal changes (see Chapter 1) The result is that the oases have reversed growing seasons (sowing and harvesting) compared to the foothill zone.

The natural delta must have been cleared of the tugai thicket and drained with canals before it could have been farmed. Once cleared, the resources of the oasis environment placed many constraints on the agricultural economy. The importation of many raw materials for construction and manufacture required considerable animal transport. The nature of this new adaptation and its development from Period 1 to Period 2 are documented from the new excavations at Gonur.

THE PALEOETHNOBOTANICAL RECORD

The charred plant remains have been studied by Naomi Miller (1991). These paleoethnobotanical remains were collected during the 1989 season at Gonur (Hiebert and Moore 1991). My initial research plan called for flotation of

remains from the deep sounding and other contexts from the Murgab delta sites. Samples were collected for this purpose. For the most part, however, we were thwarted in the plan to float samples in the field by strong winds which scattered the drying samples back into the ancient desert. Flotation of several samples was actually accomplished inside a tent on calm days. These few flotation samples allow us to judge what information we are missing by not having carried out a complete program of water separation. Instead, samples were sieved with a fine (2 mm) screen. This series of samples was cut from the balk of the deep sounding on the north mound at Gonur. This midden deposit was a perfect context for the study of the ancient ecology of the site, for the excavation cut through to the earliest occupation in the oasis and included the later period as well. The midden deposit was rich in sherds, carbonized plant remains, animal bones, and burned dung. The different origins of the midden deposits are reflected in the amounts and types of plants and plant parts preserved. While one goal of the study was the reconstruction of the original depositional contexts, the goal here is the reconstruction of the distinctive oasis economy. More varied contexts will be tested in future programs.

Miller's analytical results are summarized in Table 8.1. Seeds smaller than 2 mm were not recorded in samples "ds 2" - "ds 9.1" due to the dry sieving technique employed in the

Samples:	loc 43 (>2 mm)	loc 43 (total)	ds 2	ds 3	ds 4	ds 6	ds 5	ds 7	ds 8	ds 10	ds 9	ds 9.1
Sediment volume (bags)	?	?	1	1	2	1	2	1	1	2	1	?
Charcoal (wt., g)	1.92	-	2.88	>4.23	5.76	7.05	5.76	4.58	3.73	7.06	9.57	?
Seed (wt., g)	0.84	1.82	0.37	0.22	2.03	0.06	0.07	0.86	0.11	0.23	1.74	2.29
Dung (wt., g)	1.15	-	1.18	+	2.48	0	0	3.90	0	+	6.89	0.07
Charcoal (ml)	10	-	12	>25	35	30	20	20	12	30	50	?
Seed (ml)	3	6	1	+	10	+	+	2	+	1	10	12
Dung (ml)	5	-	5	+	5	0	0	10	0	+	30	+
Sample volume (ml)	18	-	18	>25	50	31	20	32	12	31	90	?
Cereal												
Hordeum vulgare (est.)	105	139	30	14	112	4	5	25	4	16	116	139
Triticum aestivum/durum (est.)	2	2	3	1	27	.	1	11	.	2	23	21
Triticum cf. sphaerococcum (est.)	.	.	.	.	.	.	.	.	.	.	8	4
Triticum cf. dicoccum (est.)	.	1	.	.	2	.	.	.	1	2	.	8
Triticum sp. (est.)	.	.	.	.	.	.	.	.	.	2	.	21
Cereal (est. from fragments)	34	90	6	.	20	+	2	8	4	12	22	42
Pulses												
Cicer	.	.	.	.	1	.	.	.	.	.	.	.
cf. Lathyrus	.	.	.	1	.	.	.	4	1	.	.	.
Lens	5	5	.	.	12	.	.	11	2	1	18	15
cf. Pisum	.	.	.	.	2	.	.	.	1	.	.	.
other large legume	1	1	1	.	.	2	.	6	.	.	+	.
Fruit												
cf. Prunus	+	+	.	+	+	.	.	+	.	.	0.5	2
cf. Malus	.	.	.	.	.	.	.	.	.	.	.	1
Vitis	2	2	.	.	2	.	.	9	.	1	9	1

Table 8.1: Taxa from Locus 43 and deep sounding samples (Miller 1991)

Samples:	loc 43 (>2 mm)	loc 43 (total)	ds 2	ds 3	ds 4	ds 6	ds 5	ds 7	ds 8	ds 10	ds 9	ds 9.1
Weed												
Centaurea	.	.	.	.	.	.	.	.	.	3	.	.
crucif 1	44	700	.	.	26	.	.	4	2	33	99	83
crucif 2	.	.	.	.	.	.	.	.	.	.	4	.
crucif 4	.	7	.	.	.	.	.	.	.	.	.	.
Salsola	.	2	.	.	.	.	.	.	.	.	.	.
Suaeda	.	3	.	.	.	.	.	.	.	.	.	.
Chenopodiaceae	.	1	.	.	.	.	.	.	.	.	.	.
Cyperaceae	.	4	.	.	.	.	.	.	.	.	.	.
cf. Alhagi	9	61	57	56	.	9	2	53	10	13	115	9
cf. Trigonella	.	116	.	.	.	.	.	.	.	.	.	.
other small legume	.	34	.	.	2	.	.	.	.	.	.	.
cf. Setaria	.	.	.	.	1	1	.	.	.	.	.	1
cf. Phalaris	.	.	1	.	.	.	.	.	.	.	.	.
Gramineae	1	33	2	.	1	.	.	1	.	1	6	.
Rumex	.	.	.	1	.	.	.	.	.	.	1	1
Galium	.	.	.	.	.	.	.	1	.	.	.	2
Adonis	.	.	.	.	.	.	.	.	.	.	1	.
Unknown 2	.	.	2	.	.	.	.	.	.	.	.	.
Unknown 3 (Centaurea?)	.	.	1	.	.	.	.	.	.	.	.	.
seeds (identifiable?)	.	26	.	1	.	.	.	1	.	.	8	2
Weed seed sum	54	987	63	58	30	10	2	60	12	50	234	98

1 Plant remains were retrieved by dry-sieving, except for those from Locus 43, which were floated; one "bag" is about 1 liter
2 Not all charcoal was picked out of sample
3 6 charred mouse droppings were found also
4 *Rumex* achene from ds 9 is winged, and looks like *Rumex crispus*

Table 8.1 (continued)

(Miller 1991)

Samples:	loc 43 (>2 mm)	loc 43 (total)	ds 2	ds 3	ds 4	ds 6	ds 5	ds 7	ds 8	ds 10	ds 9	ds 9.1
Plant parts												
Hordeum vulgare internode	1	592	14	.	6	.	.	34	.	1	28	.
Triticum aestivum/durum internode	2	60	11	.	8	.	.	5	.	1	30	16
other Triticum internode	.	67	.	.	.	.	.	7	.	1	.	.
Vitis peduncle	10	10	.	.	.	.	.	3	.	.	1	1
Triticum dicoccum spikelet fork	.	.	.	.	.	.	.	.	.	.	0.5	5
Cruciferae 1 silique	+	++	.	.	+	.	.	+	+	+	++	++
Cruciferae 2 silique	.	.	.	.	.	.	.	.	.	.	+	.
Cruciferae 3 (silique sections)	.	.	.	.	.	.	.	1	.	.	2	5
Cruciferae 4 silique	+	+	.	.	.	.	.	.	.	.	.	.
Alhagi pods & frags	+	++	++	++	++	+	+	++	+	+	++	.
straw culm nodes	60	.	.	.	.	.	.	.	.	.	.	.
leaf	3	3	.	1	.	.	.	.	.	.	.	.
Unknown 1	.	.	.	.	.	.	.	.	.	.	.	1
Unknown 2	.	.	+	.	.	.	.	.	.	.	.	.

Table 8.1 (continued)

(Miller 1991)

field. "Loc 43" is a flotation sample providing the control for the remains smaller than 2 mm. Locus 43 is Hearth 1, which was found directly on the floor of room 2 of the domestic architecture. This hearth was full of charcoal and seeds, presumably from cooking, while a second hearth (Hearth 2) was filled with burned bone fragments. Table 8.1 compares locus 43 with all of the samples from the Gonur deep sounding, showing that the most similar contexts are from sample "ds 9" and sample "ds 4", layers which may have come from similar contexts (see Chapter 1). The composition and percentages of the cultigen seeds and plant parts larger than 2 mm do not differ significantly between the floated sample and the dry sieved samples. A significant difference is noted in the composition and numbers of weed remains recovered between the two types of recovery techniques. Identification of the weedy plants will allow better reconstruction of the fields and crops.

Cultivated plants

Cultivated crops from the Gonur samples include barley, wheat, and pulses. The presence of dwarf or shot wheat (*Tritcum sphaerococcum*) in the upper levels of the deep sounding (Period 2) is potentially significant because dwarf wheat is considered to be a South Asian variety (Costantini 1977a). Period 2 at Gonur has other evidence of interaction with Baluchistan through sites of Mehrgarh and Sibri.

Caution must be used in over-stressing this identification, however, since the small wheat grains may be T. compactum, and the size of the puffed seeds was difficult to measure. The dwarf wheat is particularly draught resistant and thus would be a successful crop in this environment (Vishnu-Mittre and Savithri 1982). It must be noted, however, that the South Asian cultigens associated with the "second agricultural revolution" of double cropping, including rye and sorghum (Vishnu-Mittre 1977), have not been found in the Bronze age sites of the Murgab delta.

Several forms of wheat and barley have been identified from the Gonur samples. Barley is the common cultigen and is found in all of the samples. The barleys (Hordeum vulgare subsp. hexastistichum) are all 6-row and include naked and hulled forms. Both seeds and stem fragments of the barley have been identified (Miller 1991). Larger samples which include more measurable seeds could show other forms of barley as well, as they have been found at other sites of Central Asia (Yaneshevich 1977). Free-threshing bread wheat (T. aestivum) is the most common wheat. Miller notes that the grain size is small, more similar to club wheat (T.compactum). Only a few of the small-sized wheat (T. sphaerococcum) and a few remains of emmer wheat (T.dioccum) were recovered. This diversity of grain cultigens types perhaps represents the attempts of ancient farmers to "hedge their bet," against the possibility that one type might

fail.

Other cultigens found in the Gonur samples are several pulses (lentils, chickpeas, and peas) which were recovered in small number. Both grape (Vitis vinifera) pips and stems were found in the Gonur samples. Grapes are very well adapted to the oasis environment and bear fruit with renowned flavour and sweetness. Remains of other fruits such as apple and plums indicate that these Bronze age inhabitants carefully tended permanent orchards or gardens.

Field weeds

The wide diversity of weedy plants from the archaeological levels indicates the utilization of various environmental zones which have distinctive flora. The field weeds like Rumex (dock), are typical of fairly moist irrigated fields (Miller 1991). Sedges (Cyperaceae) are typical of the salty marshes which surround the edges of the delta branches and are found along the canal edges. The herbaceous species and annuals that was identified, such as the Cruciferae, as well as Adonis, Salsola, Suaeda, Seteria, and Phalaris, are typical of the Central Asian shrub desert steppe (Walter and Box 1983:200). The most ubiquitous wild plant is camelthorn, which would have been found outside of the cultivated areas, between and beyond the fields as well as in overgrazed areas immediately around the site. Camelthorn is a thorny plant which inhibits grazing and it

is usually found where overgrazing has occurred. Seeds of camelthorn in sheep dung probably indicates that the sheep have been grazing on the oasis edge and in the desert.

Fuel

It is likely that some of the seeds from the deep sounding originated in dung fuel that was preserved by partial burning. Other plant material appears to have been burned as a whole stalk, given that the seeds and pods were intact. In particular, one of the mustard family (Cruciferae), was burned in quantity. This is an ephemeral wild plant which propagates both by seeds and vegetatively. It would hardly be a useful plant for fuel since it has no woody parts. However it could have been harvested as hay or fodder and subsequently burned.

Further work will also include analysis of the wood charcoal remains from the samples. Lisitsina's (1968) research on carbonized wood remains provides an excellent comparative base for the study of the wood use, suggesting that the Bronze Age wood resources were not significantly different than those of today in the foothills of the Kopet dag. Analysis of the Gonur charcoal is pending the collection of comparative material from the oasis and desert areas surrounding the modern area of Gonur as well as from the area of the oasis. Common trees of the Near East that are found in the oasis environment as well as the

Wood resources of Southern Turkmenistan

	foothills	oases	deserts
Acer sp. (Maple)	X		
Ulmus sp. (Elm)	X		
Fraxinus sp. (Ash)	X		
Juniperus sp. (Juniper)	X		
Populus sp. (Poplar)	X	X	
Olea sp. (Wild olive)	X	X	
Tamarix sp. (Tamarisk)		X	X
Salix sp. (Willow)		X	X
Haloxylon sp. (Saxaul)			X

Table 8.2: Distribution of wood resources by environmental zones. Figure based upon data from Lisitsina (1968).

surrounding desert, such as poplar and tamarisk, were common fuels at Shahr-i Shokta (Costantini 1977a, 1977b). We expect to find use of Haloxylon, (saxaul), the desert shrub wood famous for its high burning temperatures and long burning coals. Based on my observations in Bayram Ali and the farms of the modern oasis, wood charcoal would come from desert shrubs, old wooden implements, fruit trees and vines. Juniper, elm, maple and ash have been identified from the Kopet dag foothill archaeological sites (Table 8.2); its occurrence at Gonur would represent the importation of wood resources into the area. Access to wood resources in the Margiana oasis would have been important since there appears to have been considerable use of fuel for ceramic, metal and gypsum plaster production.

THE FAUNAL REMAINS

The sample of animal bones from the Gonur deep sounding was compared with bones from the fine sieved samples to ensure that the recovery of bone was adequate for a preliminary assessment of the prehistoric animal use (Moore 1991a). Bones from several areas of the site were collected for systematic study from the north mound domestic architecture, the deep sounding, and several of the early rooms at Gonur south (Table 8.3). Additional material was collected by R.Meadow from several room contexts from the south mound (Meadow 1991).

		Shurf-North Mound			Rooms-South Mound	
		Period 1	Mixed	Period 2	Period 1	Period 2
Medium Mammal		375	509	135	27	49
	%	65.4	63.6	74.5	36.0	43.7
Sheep/Goat		106	128	28	24	54
	%	18.8	16.0	15.4	32.0	48.2
Gazelle		3	1	--	--	5
	%	0.5	0.1			4.5
Wild Boar		6	9	3	11	--
	%	1.0	1.1	1.7	14.6	
Large Mammal		63	78	13	8	1
	%	10.9	9.7	7.2	10.6	0.9
Cattle		17	31	--	4	1
	%	3.4	3.8		5.3	
Kulan		--	2	--	--	--
	%		0.2			
Canid		--	--	--	1	--
	%				1.3	
Bird		--	--	--	--	2
	%					1.8
Tortoise		--	1	--	--	--
	%		0.1			
Unidentifiable		11	41	1	--	--
	%	1.9	5.1	0.6		
Total		592	800	181	75	112

Table 8.3: Animal remains at Gonur depe by Period
(Moore 1991)

Wild animal exploitation

Wild boar, gazelle, onager, hare, hedgehog, rodents, tortoise, and birds were hunted and eaten as a small complement to the domestic animals. Wild animal remains in the deposits never exceeded 5%, but represent some of the most interesting information about the relationship of humans to the desert environment.

Wild pigs and gazelle represent two different environments which were used for hunting: the boar inhabits the natural tugai thickets along the banks of the river branches; the gazelle is part of the veneer of fauna over the Karakum desert. Hunting of wild boar was occurred primarily in Period 1, suggesting that areas of the deltaic thicket still existed. By Period 2, the frequency of wild pig is less than 1%, most likely indicating that the thickets of the natural delta had been transformed into agricultural areas. The animals which would have been found on the fringes of the fields and in the desert, such as tortoise and hedgehog, were found in low numbers throughout the occupation.

Wild animals are more commonly featured than domestic animals in the local designs on metal and stone objects. Snakes, scorpions, birds, tigers, wild sheep, and other less distinctive animal depictions are found. It is typically suggested that the artistic designs must have come from outside of Central Asia (Sarianidi 1990, Masson 1989).

While Bukhara tiger, snakes, scorpions, etc. are also part of the Central Asian desert and river ecology, their remains have not yet been found in the archaeological deposits. Mountain goat designs are more common on artifacts from the related Bactrian oases, which are close to mountain resource areas. While few bird bones were found from sieved deposits, bird motifs are common on Margiana (BMAC) stone and metal seals. These birds are usually interpreted as eagles, and in fact the bones of a small eagle were found from Gonur south, room 84 (domestic architecture).

Thus, there is no reason to look outside of Central Asia for the inspiration for the animal images. On the contrary, BMAC designs appear to be strongly influenced by the desert which surrounds the oases.

Domestic animals

Sheep and goats

Domestic sheep and goat bones were the most common of all animal remains found at Gonur. Moore (1991a) finds that the herd represented by the Gonur remains contained older individuals typical of an economy emphasizing secondary products. The herds of sheep and goat provide a source for meat as well as secondary products such as milk and wool. Very young sheep and goat remains from Gonur indicate that some sheep and goat would have been kept near to the settlement, similar to the ethnographic situation in the

traditional oasis (see below).

There is no perceptible difference in the animal composition or herd composition between Period 1 and Period 2 (throughout the Bronze age occupation at Gonur).

Oasis pastoralism

Clearly herding formed an important component of the Bronze age oasis economy. K.Niyazklychev (1973) describes the traditional annual herding cycle of the Turkmen before the 19th century. These farmers were also be herders. Turkmen living in the Murgab River delta (Margiana oasis) traditionally farmed and herded karakul and fat tailed sheep with some goats. Camel were herded by separate herders. He notes that horses were widely used and that this alters the ancient system. Herders (chovdur in Turkmen) covered an area around the oasis to the north. Each chovdur knew the region, the wells, the temporary summer camps (yazlag) and winter houses or camps (gyshlag) which are grouped in villages in the oasis. The gyshlags are all located in the cultivated areas, where herders could find late forage and reeds for shelters.

In the spring the herders go north and northwest searching for pasture and water. Some sheep and goat are left behind in the gyshlag. Usually the summer camps are located near desert wells. The distance between the summer and winter camps is a trip of 3 to 10 days or between 24 and

80 kilometers. In the Soviet period, the distance that the herders travelled was less. Although Niyazklychev does not mention the reason for this, it is most likely due to the fact that with the Soviet period, horses were collectivized and taken away from individuals.

Herders tend to collect outside of the oasis at traditional places, at hills or hollows where water collects and wells have been dug. These have vast amounts of sheep and goat dung covering the surface. One particularly well known traditional yazlag is found today in an area irrigated by the Karakum canal. Yaz depe, the type site of the Iron age in the Murgab delta oasis, formerly was one of the closest major summer camps to the traditional oasis. I would estimate, based upon old maps and descriptions, that Yaz depe was about 15-20 km north of the edge of cultivation (34 km to the northwest of the area of Bayram-Ali).

From 3 to 5 individuals (men) who are related go out to the summer camps. They leave the winter camp at the end of May. Each summer camp of the herders is known to the other herders. The herders stay out in the desert for about five months, from the end of May until the end of October. The period to return is said to be marked by the beginning of the southern migration of birds.

Moore made several observations concerning the herding camps in the desert surrounding Gonur depe in April and May of 1989. The camps were used for 2 to 5 days. In one case,

a young sheep was butchered, based upon the bones found in the camp along with very sparse material remains. The herding station consisted of simply a hollow where the sheep were herded and a small lookout campsite above for the herders. The location and duration of the station depended upon the availability of water at a nearby small takyr.

Large dense scatters of sheep/goat bone fragments have also been found out in the desert (Sarianidi 1990); these are probably former yazlag camps. The features may be connected with hunting or butchering.

Cattle

Cattle (*Bos*) are traditionally not pastured outside of the oasis area and could have been kept at Gonur in the building complexes, as is typical in the modern oasis gala, by providing them with forage and water.

In the excavations at Gonur, *Bos* remains were few compared to sheep and goat, probably reflecting the actual low number of these large animals. The specific type (humped vs unhumped) of domestic cattle found in the excavations could not be determined from the bones. However, many animal figurines with humps probably were intended to be images of hump backed cattle.

All of the cattle remains came form domestic animals, with none of the *Bos primigenious* which inhabit steppe environments. Any occurrence of *Bos primigenious* would have

indicated a considerably less desertic environment than the present environmental conditions.

The Bos remains were found in midden deposits from domestic debris. Like sheep/goat, cattle bones are found in ritual contexts interred together with ceramic vessels in isolated cenotaphs. In one particular case, the type of meat left in the cenotaph is determinable: Two hindlimbs and a forelimb were found, representing the meaty part of a mature animal. In another case, an entire bull or cow was interred in the large (although robbed out) burial at Togolok-1 (see Chapter 2).

Sarianidi and Masson have both written about the prominence of cattle in the symbolism of the Bronze age of Central Asia and about its Mesopotamian origins. Masson relates a gold bull's head from Altyn depe to bull's heads found in Mesopotamia. This parallel has been interpreted as an imported Mesopotamian "bull cult" in the foothill zone of Central Asia (Masson 1973). A similar small white stone bull's head from Togolok-21 has been interpreted as a connection between Zoroastrian bull symbolism and Central Asian Bronze age symbolism (Sarianidi 1990). However, such a diversity of animal forms in figurines come from the Central Asian Bronze Age sites that there is no special significance in the occurrence of a bull or cow figurine.

Camel

The other important large domestic animal at Gonur was the camel (Camelus sp.). Grab sampling revealed no remains of camels from the excavations of Period 1: not from the north mound monumental building (kremel); from the north mound domestic architecture; and not from the north mound deep sounding. Faunal materials excavated in past seasons are kept together with the ceramics in the "field museums," that is, the pottery yards next to the excavations. No identifiable camel bones were found in the collections from Togolok 21 or Togolok 1 from excavations carried out between 1983 and 1986, where the bones were exposed for more than four years (some of the teeth were identifiable as cattle and sheep/goat). From the 1989 season at Gonur south (Period 2), no camel bones were found in excavations of secondary buildings inside the main wall on the north and the west side. However from the latest phase of construction at Gonur south, uncovered in the 1990 field seasons, camel phalanges and limb bones were found in rooms 231, 252 and 254, all of which are part of the later (Phase 5) Central Building (Meadow 1991). The significance of the late appearance of the camel bones in the Margiana oasis is not yet clear. The camel would be a key animal for the transport of the large amount of stone and metal materials imported to the desert oasis. The Bactrian (two-humped) camel is clearly shown in several figurines and amulets from Margiana and from Bactria. Camels certainly could have been

present in the sites of the Murgab delta during Period 1, without their bones having been deposited in the in the areas which we sampled.

Equids

Remains of the true horse, Equus caballus have been eagerly searched for in the Central Asian Bronze Age sites. This is partly due to the myths of the Rg Veda which describe the "chariot-riding" Aryan speakers from the north and partly due to the interest in transportation problems associated with the oasis environment.

Figurines of wheeled carts are found in both Periods 1 and 2 of Margiana and have been part of the Central Asian tradition since the early third millennium (Namazga IV). The animal figurines connected with the carts always have humped torsos, indicating either camel or a humped cow (Kuzmina 1980). At Gonur, primarily wild equids (onager) have been found in both room and midden deposits. These would have been hunted in the desert along with gazelle and not used for transportation.

Meadow (1991) identified several bones of domestic donkey (Equus asinus) from the south mound excavations at Gonur in 1990. The stratigraphic context of these remains is presently unclear (phase 3-5, ranging from BMAC Period to late Bronze/early Iron age). It is important to note that the BMAC Period has steppe nomadic ceramics (Andronovo

type), and that Andronovo nomads were familiar with the domestic horse.

Two types of Bronze Age pastoralists

It is likely that the ancient agriculturalists in the Murgab delta participated in herding, forming a network of local pastoral nomadic routes into the desert on a seasonal basis in search for fodder. The implications for this are two-fold. First, the desert served not as a barrier but as a bridge between regions linked by these herders. Seasonal pastoralists such as these may have been the original colonizers of the Margiana oasis, as well as being the traders between the foothill zones and the desert oases.

In addition, there is evidence for a second type of nomadism. This is in the form of Andronovo steppe nomadic ceramics and metal objects found in Period 2 buildings, as well as from campsites surrounding the oasis.

The question of interaction with distant nomadic peoples by Period 2 at Gonur is a key to understanding the interaction of the Central Asian oasis of Margiana with the outside world. In the next chapter I argue that the underlying factor in the development of the BMAC is the ability of the Bronze Age inhabitants of the oasis to bring in raw materials from distant areas. If these are long distance pastoral nomads, as is suggested by the ceramic parallels from vastly different areas, then they may have

played an important role in the development of the oasis economy.

CONCLUSIONS

In conclusion, it is possible to sketch out a picture of the new settlements of the desert oasis which originated in Margiana (Figure 8.1). Dispersed fortified building complexes (similar to qala) were built on small natural rises or takyr flats where irrigation agriculture would not have been possible. Surrounding the building complexes were fields and orchards tended by families of the qala. Irrigation water and river runoff formed salt marshes and dry takyr with useful reeds, salt adapted plants, and seasonal fauna. The desert edge lay at the margins of the fields and takyr with regions of dunes stabilized by saxaul useful as a source of wood and as seasonal vegetation for herds. Small sites of local herders would be found in these areas, as well as camps for interaction outside of the oasis by traders and steppe nomads. Along the banks of the Murgab River, tugai thicket would have been exploited for wood resources as well as for boar and tiger. Beyond the immediate region of the oasis, moving dunes would have prevented movement except in north-south gullies between the dunes, which would have acted as a natural conduit to the eastern foothill zone of the Kopet dag. The configuration of canals, orchards, and field edges is a

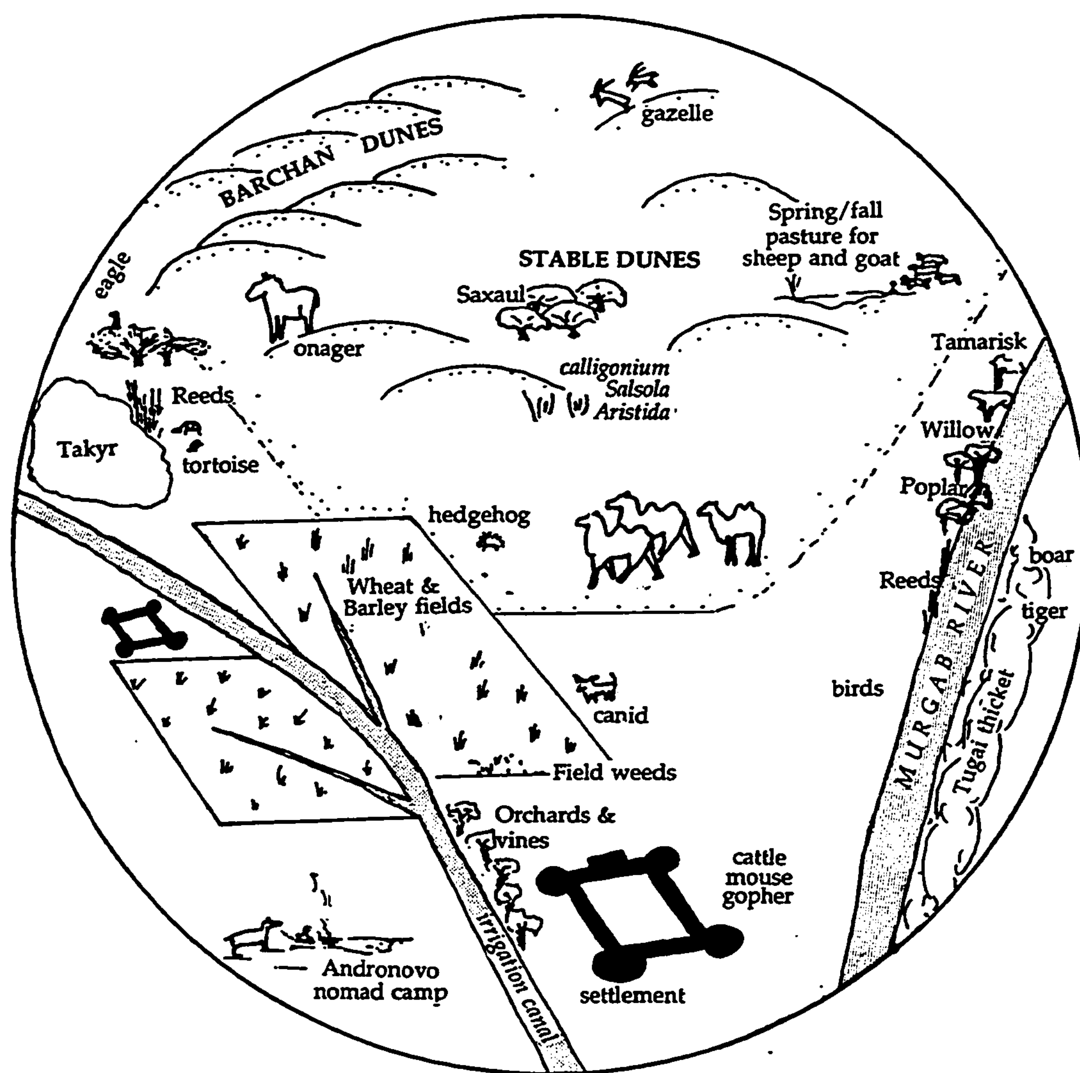


Figure 8.1: reconstruction of the oasis environment around Gonur depe, Margiana .

fragile system which traditionally requires constant year-round attention. In the traditional oasis, when these features are not maintained, the man-made oasis environment quickly succumbs to the regrowth of tugai thickets, to salinization, and to the encroachment of moving dunes.

CHAPTER 9

THE DEVELOPMENT OF THE BMAC

The initial occupation in Margiana (Period 1) includes a wide variety of small finds and ceramics that are stylistically very similar to those found in the late Namazga V sites of the Kopet dag foothill zone. In Period 2, ceremonial and ornamental objects document the emergence of a new set of symbols in place of the Period 1 iconography.

The iconography of Period 2 is depicted on small stone objects, terracotta friezes on ceramics, bronze compartmented seals, cylinder seals, metal vessels, and ceremonial objects. Ceremonial objects include stone staffs, miniature stone columns, amulets, and decorated maceheads and axes. The motifs include a new set of images including humans figures, isolated heads, desert animals and plants, and fantastic dragons (Sarianidi 1981b; Amiet 1986,1989; and Francfort nd).

The area of settlement with this 'Margiana Period 2' culture extends beyond Margiana and can be correlated to the spread of the oasis adaptation to other oasis regions, notably in southern and northern Bactria. The small finds from Margiana are so similar to those from the Bactrian oases that the assemblage is called the Bactrian-Margiana Archaeological Complex (BMAC).

Specific attributes of these images appear in the later iconography and myths of Iran, South Asia, and even the eastern Mediterranean (Mitanni). Archaeologists, art historians, and linguists suggest that this group of symbols is associated with a shared Indo-Iranian mythology reflected in both Vedic Indian myths and Avestan (Persian) myths (Sarianidi 1986b, 1990, Parpola 1988, Wilhelm 1989).

In the BMAC, other iconographic precursors of later Indo-Iranian mythology and Persian religion, i.e., Zoroastrianism, are found. These include narrative scenes of power and domination, images of narcotic plants, and the use of amulets on bullae. BMAC artifacts include black/white (steatite/alabaster) symbolism evoking the structural dichotomy of good/evil and purity/pollution which emerges in later Zoroastrian ideology (Choksy 1989). Given the chronology presented in this thesis, the BMAC is the earliest currently documented appearance of this new set of iconographic symbols. My colleagues excavating in Margiana base their chronology upon stylistic parallels and have not accepted the chronology presented here (Sarianidi 1990). Renfrew's (1987) recent discussion of the origin of the Indo-Iranians does not address the BMAC because he relies upon outdated sources (eg, Masson and Sarianidi 1972) which pre-date the large scale excavations in Bactria or Margiana. The occupation in Margiana spans the cusp between the old

belief/iconography system and the new; and the problem posed here is the source of the BMAC style.

There are three important points to be made in this chapter:

1) Chronologically, the BMAC occurs only in Period 2 of Margiana; this is a later and successive stage in the occupation of the oasis which began in Period 1. Most categories of small finds are present in both Period 1 and Period 2. There is no important change in the use of the environment, agricultural system, or settlement between Periods 1 and 2. It is the emergence of a complex or an assemblage of objects with a specific style and attributes that characterize the BMAC.

2) Several of the specific objects characterizing the BMAC were fabricated in Margiana. The analysis of the Period 2 architecture at Gonur (Chapter 8) shows that production becomes based within the building complexes.

3) Many BMAC small finds were produced from imported materials. Both ceremonial and domestic objects were made of imported materials as well as locally available material. The distribution of the BMAC outside of Central Asia, appearing primarily in burial contexts, is evidence for the movement of Central Asian peoples involved in acquiring raw materials, trading, or conquest.

In the following sections, I compare the small finds from Period 1 sites to Period 2 sites, by class of material. Small finds are made of both locally available materials and exotic materials which had to have been brought to the desert oasis. The two locally available classes of materials are clay (terracotta) and bone. Stone resources, including large utilitarian stones and semi-precious stones for ornaments, metals, and shell, were imported. The BMAC regional style was used not only on the locally available raw materials of animal bone and clay, but also in metal and on a wide variety of stone types.

Table 9.1 summarizes the chronology of the Margiana small finds from excavated contexts. Period 1 excavated contexts include the following: floor levels of the Gonur north (kremel) excavations; 1989 Gonur north domestic architecture; Kelleli 3, and Kelleli 4 excavations. Period 2 excavated contexts include the following: Phases 1-4 of the building complex at Gonur south; Togolok 21 and Togolok 1 architecture; and Togolok 1, 21, and 24 burial contexts.

The following illustrated materials represent a selection of previously published items from the Margiana Archaeological Expedition excavations 1975-1987. A full catalogue can be found in Sarianidi (1990). The drawings here, are from my archive of drawings of finds from excavated contexts. Unless otherwise noted, they come from Period 2 (BMAC) contexts.

Period 1	Period 2
Terracotta	
NMG V style human figurines	
Whorls of the Anau style	
	* Unbaked clay figurines
	* figurines from ceramics
	* terracotta amulets
animal figurines.............	animal figurines
cart + animal figurines.......	cart + animal figurines
phalli.......................	phalli
Bone objects	
bone needles.................	bone needles
worked astragali.............	worked astragali
bone tools...................	bone tools
	* bone tubes
	* bone axes
textiles?....................	textiles

Period 2 unstarred items are part of the general tradition in Margiana

* = BACTRIAN-MARGIANA ARCHAEOLOGICAL COMPLEX

(1)= Imported objects (not part of the BMAC)

Table 9.1: Chronology of small finds in Margiana.

Period 1	Period 2
Steatite + alabaster	
steatite bowls w/triangles	steatite bowls w/triangles
steatite circle + dot motif	steatite circle + dot motif
kidney shaped bowls	* kidney shaped bowls
alabaster bowls	* alabaster bowls
alabaster cups on stands	* alabaster cups on stands
stone staffs	* stone staffs
miniature columns	* miniature columns
stone pocket bags	stone pocket bags
mace heads	* mace heads
biconical beads	biconical beads
	* "perfume flasks"
	* amulets
	* cylinder seals
	* two-part pieces
	* misc pieces (animals figs, stone astragali, marbles, etc)
	* multi-part figurines
	* steatite plaques
	(1) indian ocean sea shell
Bronze + other metals	
standard knifes + spears	standard knifes and spears
strainer vessels	strainer vessels
plain bronze pins	plain bronze pins
geometric bronze seals	* geometric bronze seals
bracelets	bracelets
	* figurative bronze pins
	* figurative bronze seals
	* figurative bronze vessels
	* ceremonial axes
	(1) curved 'nomadic' type knifes
	* lead items (silver, gold,etc)
	* miniature bronze objects

Period 2 unstarred items are part of the general tradition in Margiana

* = BACTRIAN-MARGIANA ARCHAEOLOGICAL COMPLEX

(1)= Imported objects (not part of the BMAC)

Table 9.1 (cont.) chronology of small finds in Margiana.

TERRACOTTA

Violin shaped human figurines   Period 1

The Margiana figurines are simple stylized female figures with outstretched arms, violin shaped bodies and exaggerated gender attributes. The heads have applied "coffee bean" eyes and beak noses. Two general head shapes are found (Figure 9.1). Figurines in the round are known; small fragments of figurines having legs and male genitalia are also known.

The terracotta human figurines found in the Gonur deep sounding are found only in Period 1 in Margiana and in the foothill sites of late Namazga V.

Margiana figurines often have incised signs on the arms, and in some cases they have necklace amulets (Figure 9.1:3). These details relate closely to the well established sequence of figurines (type I and type III) from the foothill zone of southern Turkmenistan (Masson and Sarianidi 1973).

While the Margiana Period 1 figurines and the Altyn depe upper level figurines are very similar, the figurines do not appear to have been exchanged or imported. Crudely formed and finely made figurines are found together in Margiana, based on finds from the Gonur deep sounding. It is possible that the variation between styles of figurines reflects different production areas, different individuals, or

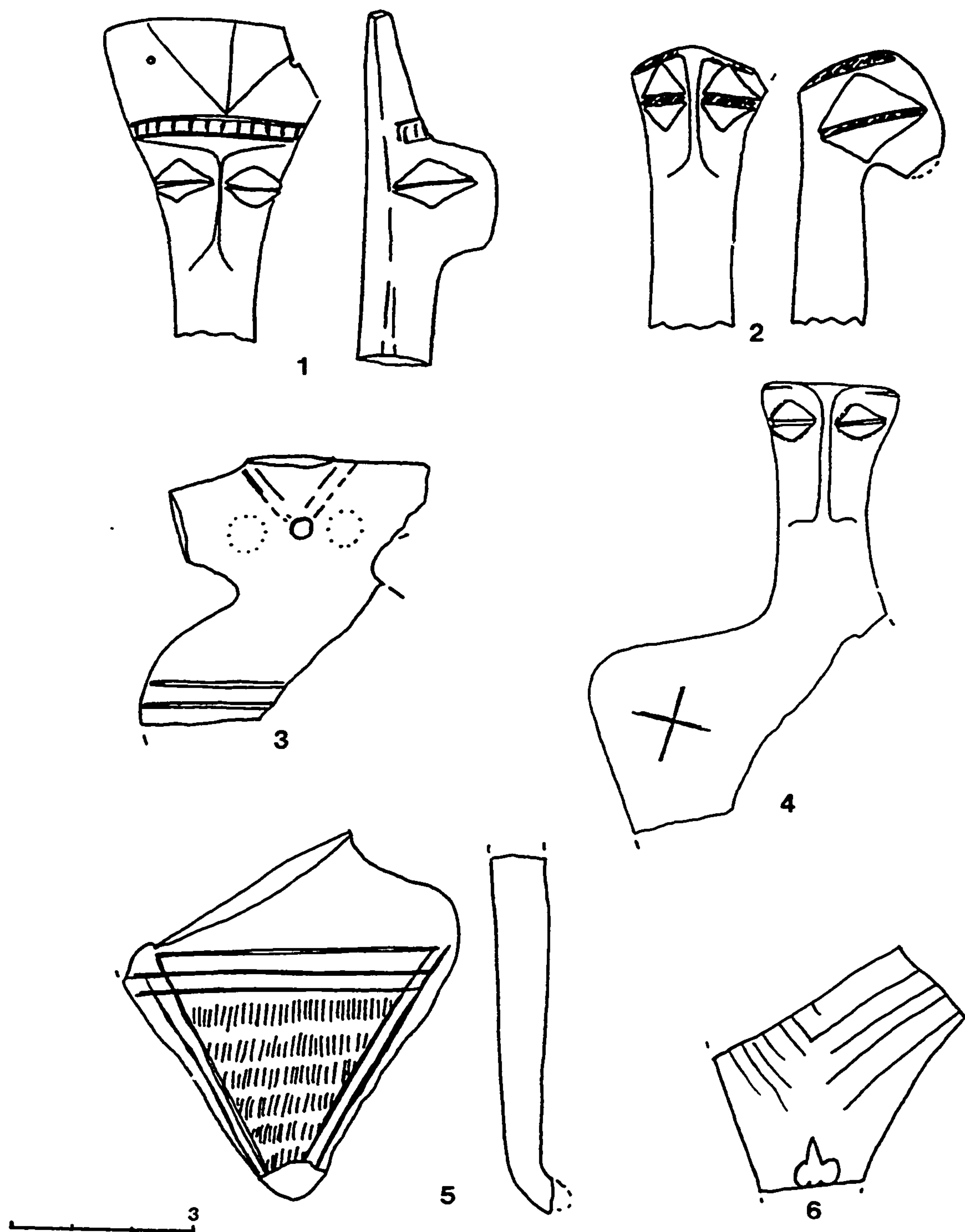


Figure 9.1: Terracotta figurines from Period 1 from Gonur depe.

different ethnic entities.

The function of these figurines is not clear. They are found on every Period 1 site in Margiana. Figurines are found in all contexts: refuse, domestic rooms, and monumental architecture. Terracotta figurines of this type have been found in architectural context and in burials in the foothill region at Altyn depe (Burial 60 exc. 5:, Masson 1988). This occurrence in the late Namazga V burials indicates that they had symbolic meaning in the belief system of Margiana and the foothill zone. We cannot speak of a central focus for ritual involving these figurines since they are found on every site, large and small, and in every household.

On the basis of the figurines, I suggest that the Period 1 people of Margiana had similar self-perceptions and a shared identity with the long established foothill populations. This changes as the figurines drop out of the assemblage abruptly, and not gradually as has been previously suggested (Masimov 1981, Sarianidi 1981a).

Unbaked clay figurines Period 2

At Togolok-21 a pair of male and female figurines was found in a small vessel (Figure 9.2:1,2). The figures were made of unbaked clay and may have functioned in ritual since they had pieces of sharp bone flakes stuck into them while still leather hard. Human figures are also found as appliques on Period 2 ceramics, in the form of a terracotta

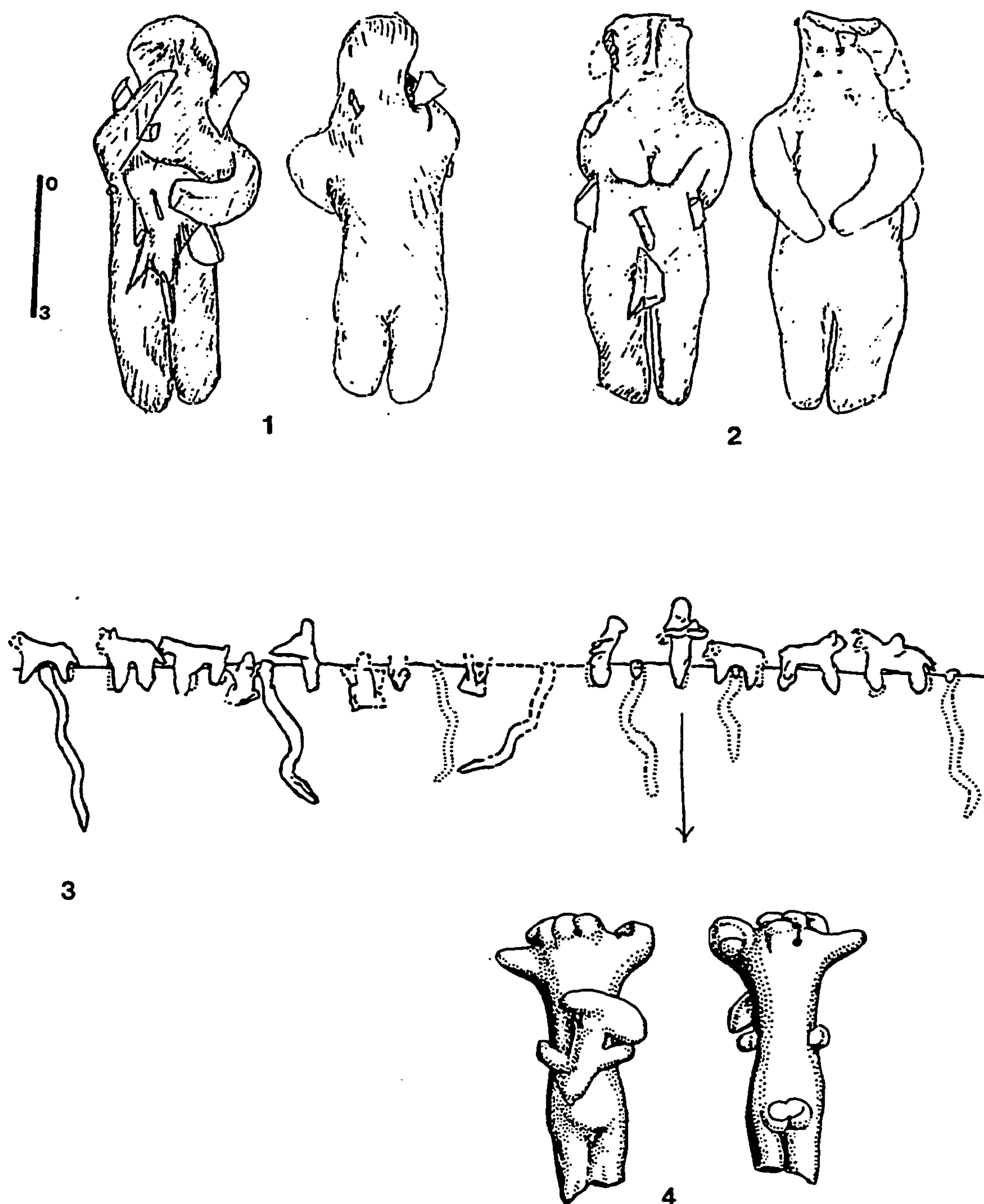


Figure 9.2:
Period 2: 1) and 2) Unbaked clay figurines from Togolok 21 (Sarianidi 1990:pl.XIX:1,2). 3) Terracotta frieze from Togolok 1, cenotaph (Sarianidi 1986:138). 4) human Figure 9.from vessel, Dashli (Sarianidi 1986:140)

frieze (Sarianidi 1980). These unbaked figures have a distinctive form (Figure 9.2:3,4), which is unlike the violin shaped figurines of Period 1.

Terracotta figurines from ceramic vessels   Period 2

Series of terracotta figurines are found on large open pots of Period 2, such as the complete vessel found at Togolok-1 (Sarianidi 1980).

There are two ways to determine if a figurine comes from a Period 2 vessel or was free standing. First, if the legs are preserved, they will show evidence of being broken off of the rim (animals and humans) or sides (frogs and snakes). Some figurines from vessels have fragments of the rim preserved between the feet. Second, figurines attached to the pots are distinctively curved (Figure 9.3). It is clear from excavated contexts that the vessels with terracotta friezes begin only in Period 2. Figurines which come from ceramic vessels are ubiquitous on Period 2 sites and this suggests the general distribution of these vessels in Margiana, rather than the limited distribution suggested by the rare occurrence of whole vessels with terracotta friezes.

The figures include birds, animals, and humans, which together clearly represent a narrative scene. Often applied frogs and snakes are shown crawling upward along the inside walls of the vessels between the widely spaced figures.

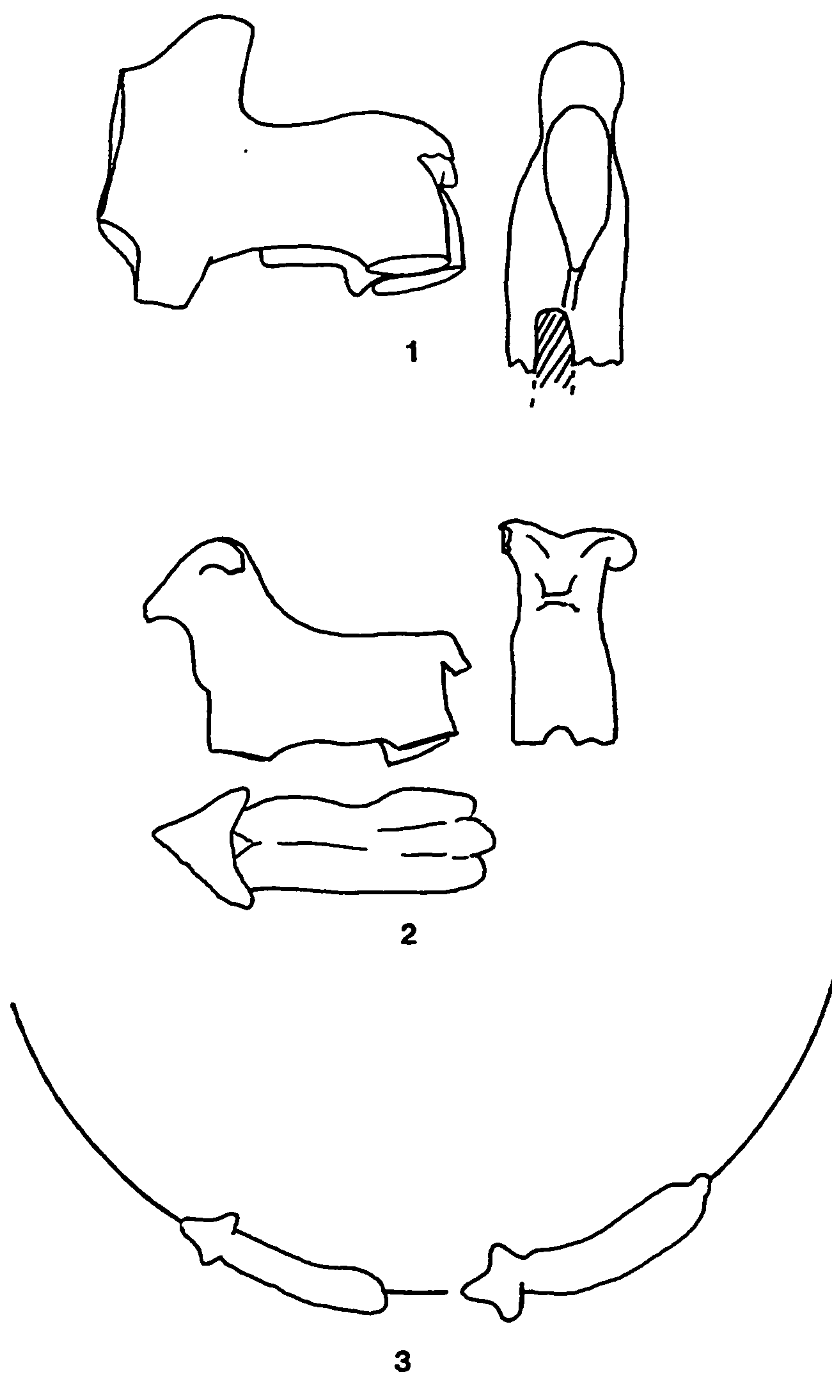


Figure 9.3: Period 2: 1) Gonur south, surface, 2) Gonur south, room 122, 3) figurines from vessels have a distinctive curve following the diameter of the vessel.

Like the unbaked clay figures from Period 2, the figures from vessel rims relate to each other, in contrast to the Period 1 figurines which stand alone. They represent a narrative, which is part of the new Margiana ideology.

Free standing animal figurines Periods 1&2

As opposed to the new tradition of human figures applied to vessels, there is a long tradition of free standing terracotta animal figurines in Central Asia. They are found on both Period 1 and Period 2 sites of Margiana. Naturalistic animal representations that can be identified include such large mammals as humped bovids, two humped camels, and non-humped animals. There are also generalized depictions of birds, dogs, frogs, snakes, and wild boar (Moore 1991a). Such terracotta animal figurines have been part of the Central Asian cultural tradition since Namazga III times and may be originally related to the painted animal designs on the Namazga III ceramics from Kara-depe.

Other terracotta objects

Terracotta amulets are common in Period 2 but are rare in Period 1. These amulets include miniature versions of stone columns, body parts such as feet and hands, phalli, token disks, balls, and cylindrical and pyramidal tokens (Figure 9.4). In Bactria, similar shaped amulets are made of metal and of stone. This is most likely due to the proximity of the southern Bactrian oases to the resource

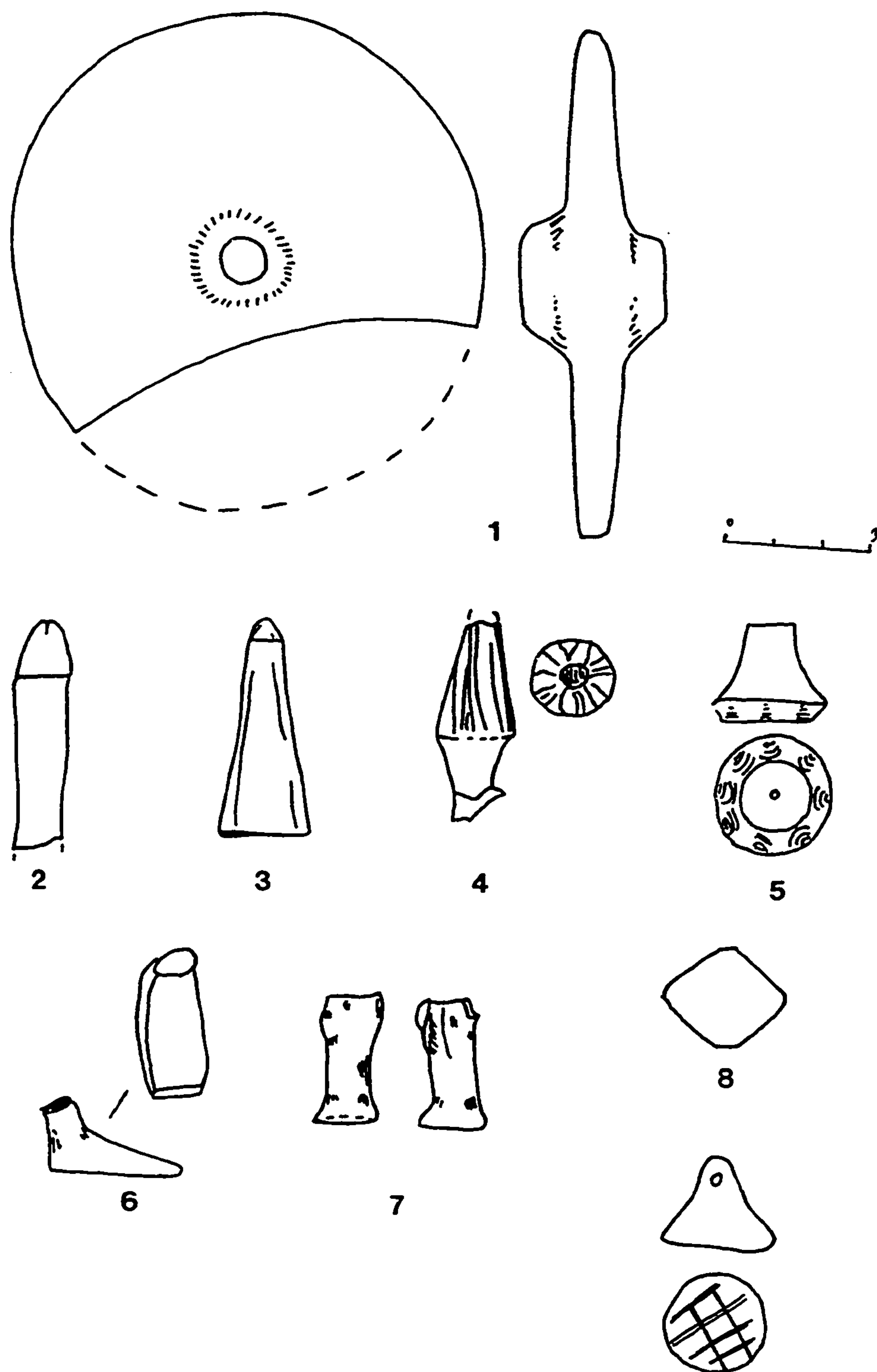


Figure 9.4: Period 2(BMAC), except 5.
Terracotta objects 1) wheel form cart 2) phallus 3) tall amulet or 'miniature column" 4) tall amulet 5) Anau type whorl from Period 1 6) amulet in the shape of a foot 7) amulet in the shape of a finger bone 8) terracotta whorl 9) terracotta stamp seal.

areas of Afghanistan, the Chagai hills, and Badakhshan.

Terracotta seals with engraved geometric designs may also be a replacement for or imitation of bronze seals when bronze metal was not available. In some cases, it appears that terracotta objects were made in the same form as objects usually found in stone or metal, thus using clay as replacement material in lieu of the scarcer resources.

Biconical terracotta whorls are a common object found on the surface and from excavations in Margiana. Terracotta whorls made locally are found in both Periods 1 and 2. Large diameter whorls were most likely miniature wheels for toy carts, smaller thicker whorls may have been used in spinning, and smaller finely finished terracotta whorls appear to be copies of steatite bi-conical whorls or beads.

One type of terracotta whorl appears to have been imported. Thumb-nail impressed whorls have been found in Period 1 in Margiana (Figure 9.4:5). This type is typical of the western foothill zone at Anau (Level 3) and has recently been found in late Namazga V levels at Altyn depe (Udemuradov 1989).

BONE OBJECTS

Animal bone is an abundantly available local raw material and, like clay for terracotta, appears to have been used to make objects otherwise made of stone or metal. Bone objects from the 1989 excavations at Gonur included needles

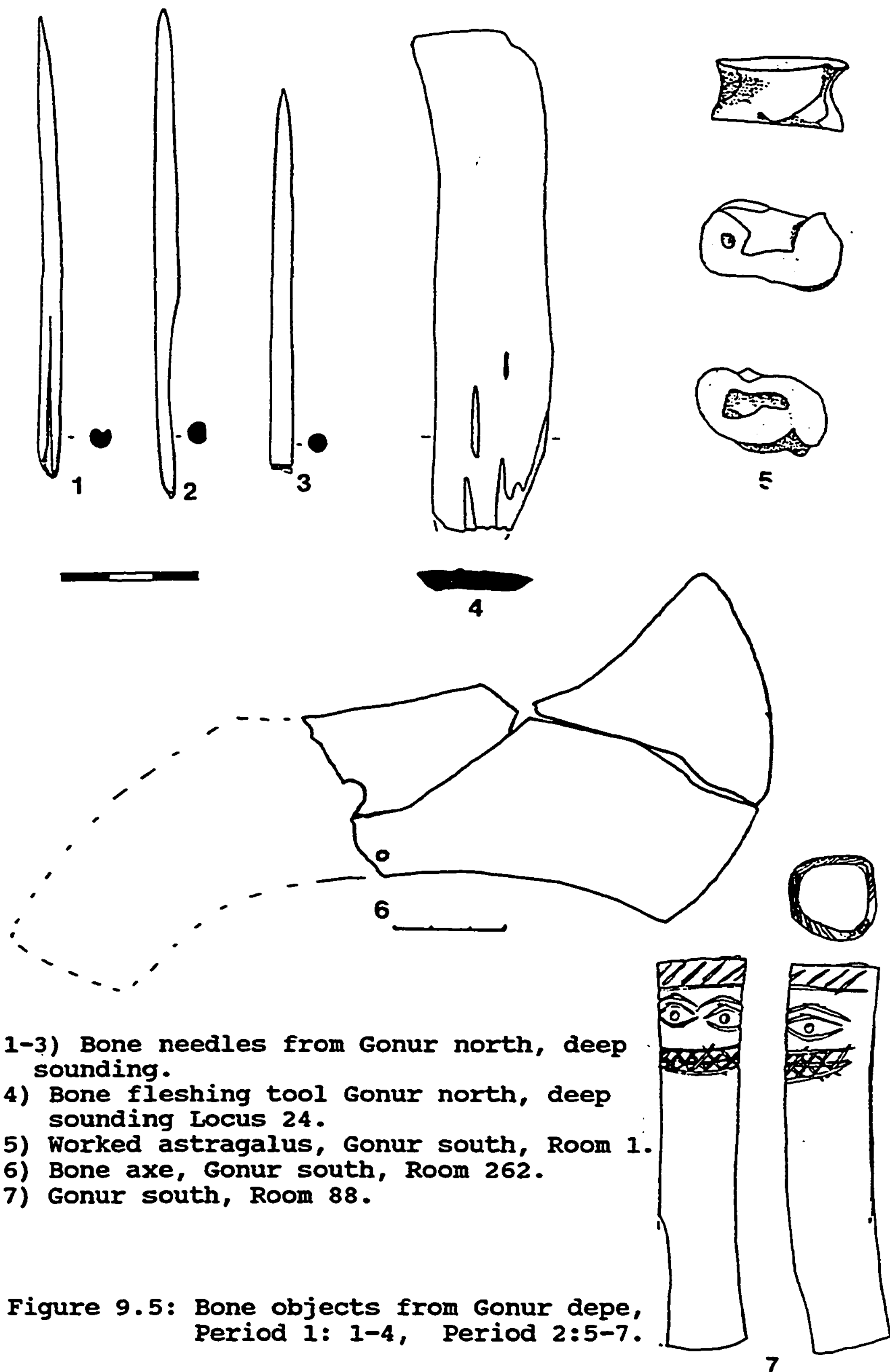
and awls, fleshers, burnishers, worked astragali (gaming pieces?), incised bone tubes, and bone "axes" (Figure 9.5) (Moore 1991b).

Bone tools   Periods 1&2

The bone tools, such as the needles, fleshers, and burnishers, and the worked astragali are typical of the Central Asian tradition as well as part of the greater Near Eastern tradition. Bone object types that appear restricted to the Period 2 assemblage are the incised bone tubes and the bone "axes".

Ground and polished astragali were common finds from the excavations of the architecture at the south mound of Gonur. The Period 2 astragali are from sheep/goat and wild pig. Astragali have been interpreted as gaming pieces from many sites of the Greater Near East as early as the Neolithic (Watson 1979:199). It is possible that these also were used as tools for grinding. Up to 4 mm of the medial and lateral surfaces has been removed by grinding. Both worked and unworked pieces were found together which suggests that the pieces were used for grinding, rather than being finished items themselves (Moore 1991b).

In addition to the occurrence of worked astragali on all of the Margiana sites whose collections I studied,, there is a white crystalline stone (marble) copy of an astragali from Togolok 21, room 50 (Sarianidi 1990). This piece is a



1-3) Bone needles from Gonur north, deep sounding.
4) Bone fleshing tool Gonur north, deep sounding Locus 24.
5) Worked astragalus, Gonur south, Room 1.
6) Bone axe, Gonur south, Room 262.
7) Gonur south, Room 88.

Figure 9.5: Bone objects from Gonur depe, Period 1: 1-4, Period 2:5-7.

faithful copy of a complete sheep/goat astragalus. It is an interesting piece in that it shows the transformation of a form from one medium to another. The occurrence of the astragalus in stone suggests an added symbolic dimension to the astragali in Margiana which may indicate that the worked astragali are more than simple tools or gaming pieces.

Bone tubes Period 2

Incised bone tubes occur only in Period 2 of Margiana and Bactria. They are part of the regional BMAC assemblage, and are not exported outside of Bactria or Margiana. The tubes represent a stylized anthropomorphic figure, with the upper part of a human face and, often with a cross-hatched band above and below large eyes.

The tubes are made from the mid-section of sheep/goat femora, and have been cut, polished, the interior reamed out, and incised. Some of the tubes have dark pigment rubbed into the incisions (Gonur-1 south, kelli 88). The length of the bone tubes ranges from 9 to 11 cm. Partially manufactured bone tubes have been recovered both from Gonur-1 and from Togolok-21. After being shaped and decorated, the tubes were highly polished either as part of the manufacturing process or while they were being used.

These pieces have been found so far only in architectural context, not in burials. Sarianidi has interpreted them as drinking tubes for sipping an opium-

ephedra drink similar to hoama (Sarianidi 1990). Today, people in northern Afghanistan make bone beads from immature sheep/goat leg bones which appear similar to the Bronze age bone tubes and suggest an alternative function as beads (Kenoyer, pers. comm.). It is most likely that the bone tubes were a type of amulet. In the context of the wide variety of amulets which are found in Period 2 in such diverse materials as terracotta, bronze, and stone, it is reasonable that bone amulets would also be found.

Bone axes   Period 2

Several enigmatic ground and polished bones from the ends of long bones of large mammals (the size of cattle) have been found in Period 2 architecture from Gonur south. Four different examples have been found, all broken. They are in the form of bronze axes which have been found in both Margiana (Togolok 21) and Bactria (Dashli 3). The bones have been ground and polished on the exterior to form a blade. They have a hole vertically ground out for a handle and a small hole for a pin to hold the axe in the handle. These features provide good evidence that the axes, usually made of bronze, were ceremonial and not for everyday use.

IMPORTED MATERIALS

Finished objects in distinctive styles imported from outside Central Asia are very rare in the oases of Margiana and Bactria. While the desert oasis areas have no metal or stone resources, small artifacts appear to have been locally produced from imported raw materials. There are two lines of evidence indicating this: 1) the local distribution of a separate style of the BMAC for the seals, amulets, and small bronze objects found primarily in Margiana (Amiet 1989); and 2) evidence of local production in Margiana in the form of the unfinished worked small objects and raw materials of steatite, metal, and stone.

STONE

Artifacts made of stone include grinding stones, mortars, pestles, weights, miniature columns, small vessels (primarily of alabaster and steatite) and a wide variety of seals, beads, amulets, and inlay made from steatite, alabaster, and semi-precious stone. The working of alabaster and steatite (softstone), and semi-precious stones, was part of the Central Asian tradition in the foothill zone of southern Turkmenistan since NMG III times at least. This tradition continued in the desert oases even in the absence of easily accessible raw materials. The wide variety of stone objects, both implements and elite or ceremonial items, indicates an importance for stone objects that is

surprising in view of transportation costs.

Steatite is the most common imported stone for small objects of domestic use as well as for ornaments and ceremonial objects. Steatite sources are found in outcrops on the Iranian plateau, and steatite is particularly common from southern Iran (Kohl 1974). Steatite is also likely to be found along the foothills of the Kopet Dag and the Paropamisus mountains, although, specific outcrops have not yet been identified (Wolfart 1980; Atlas of Turkmenistan 1984).

The opaque, yellowish, finely banded alabaster of vessels found in Margiana is similar to that found in the foothill zone. Limestone and sandstone, common in the foothills of the Kopet Dag, were used for the many grinding stones found in Margiana. The use of these resources appears to be a continuation of a long tradition of stone use by foothill populations that continued to exploit the same resources even when they moved to Margiana.

The nearest sources for semi-precious stones such as carnelian, agate, and lapis are in the area around Badakhshan, and not the Kopet-dag or Paropamisus mountains. Such stones are also found in Iran and in the Chagai hills of Afghanistan (Wolfart 1980).

While the desert adaptation did not alter the reliance on stone artifacts, what was previously locally available around foothill settlements, had to be imported into the

oasis environment.

Stone vessels: steatite and alabaster PERIODS 1&2

In Margiana, steatite bowls, dishes and vials are found in both Period 1 and 2 (Figure 9.6:1-5). The decorative style of the vessels is included in the serie recente style of Iran (Miroschedji 1973).

Turned and carved serie recente steatite vessels from southern Iran (Tepe Yahya IVA) and from the Persian Gulf typically have double circle and dot motif (Potts 1990). These are different from those found in Central Asia (described below). The styles from the two areas have been grouped together as the serie recente as found in Iran (Miroschedji 1973). Both the Gulf (and southern Iranian) serie recente style and the BMAC serie recente style occur on sites throughout Iran, Mesopotamia, and the Gulf from 2200-1700 BC.

In Margiana, kidney shaped dishes (part of the previously defined serie recente corpus) are found in both Period 1 and Period 2. Such vessels are also known from Mehrgarh and Sibri where they are associated with BMAC burials (Jarrige 1989).

Small vials with square bases and round necks are produced in Margiana from imported steatite or pre-formed blanks (Figure 9.7:3). The finished objects are commonly found in Period 2 in Margiana and in northern and southern

Figure 9.6: Steatite and alabaster vessels from period 1 and Period 2.

1) black steatite bowl, Togolok 1 room context

2) dark grey steatite bowl, Gonur north (kremel) rm 35

3) grey steatite, Gonur north, (kremel), room context

4) grey steatite, Gonur north, room 1

5) grey steatite, Gonur south, room context,

6) yellowish alabaster, Gonur north (kremel) room 4

7) yellowish alabaster, Gonur south, room context

8) yellowish alabaster, Togolok 1, room context

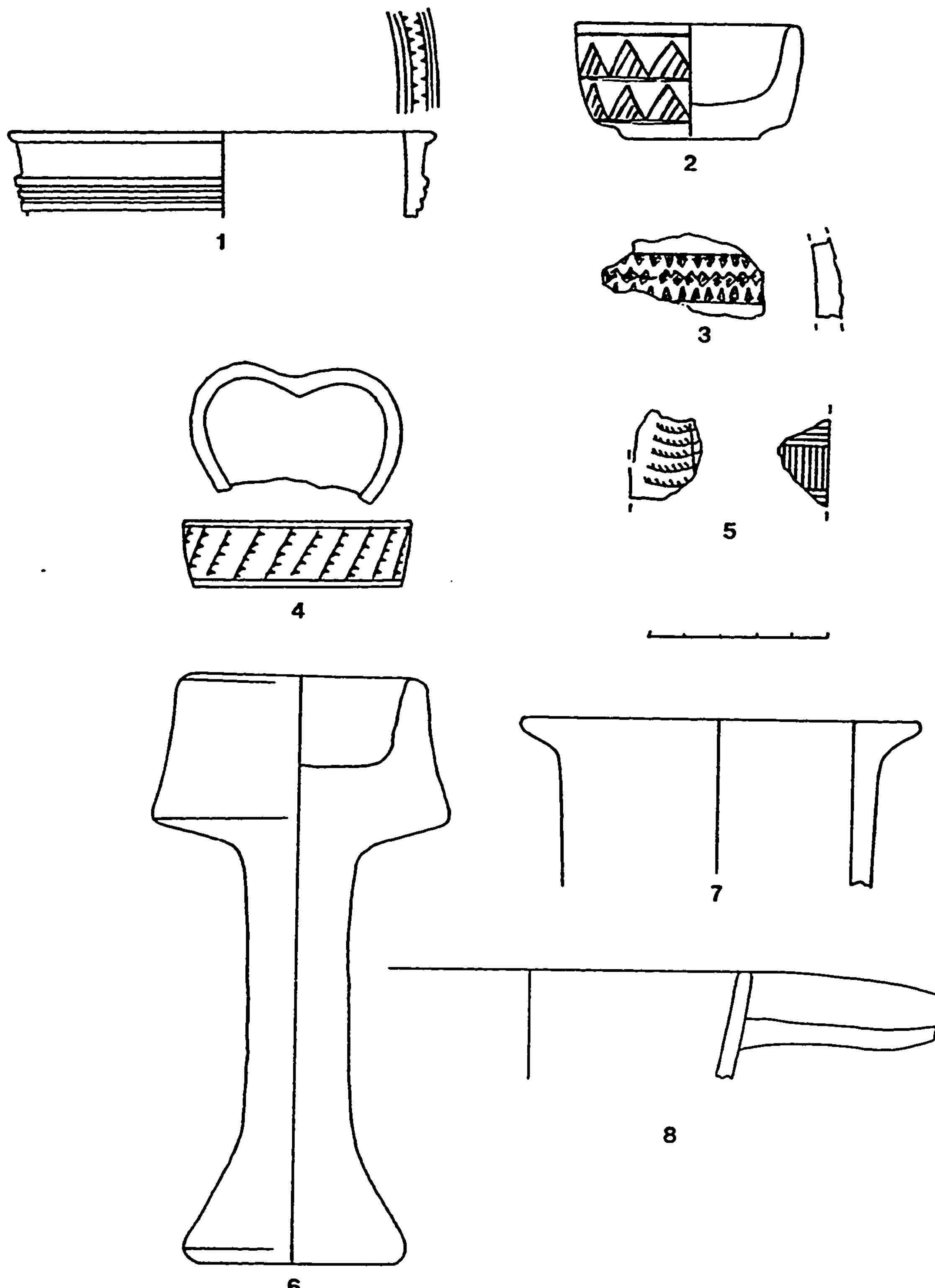


Figure 9.6: Steatite and alabaster vessels from Period 1 and Period 2.

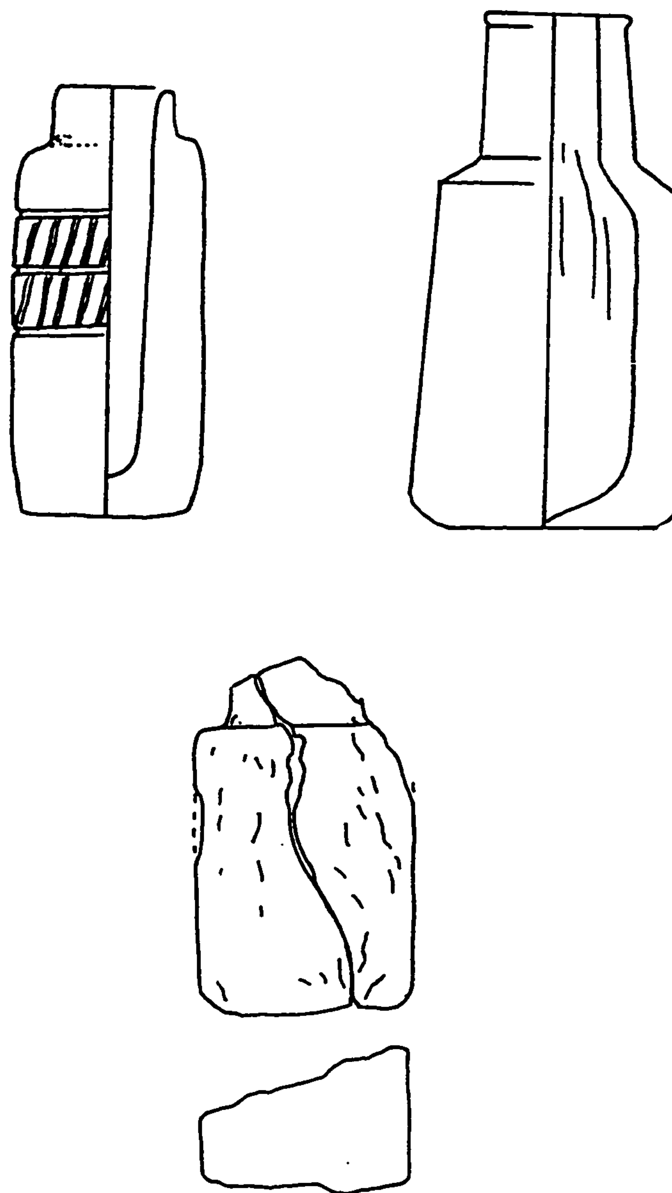


Figure 9.7: Small vials from Period 2. 1)steatite vial, Togolok 21, Room 172, 2) finely banded yellowish alabaster, Togolok 21, Burial 30, 3) unfinished steatite vial, Togolok 21, Room 148.

Bactria. The carved decoration on these vials includes incised lines, hatched triangles, and single-circle and dot decoration as well as figurative depictions of trees, snakes etc (Figure 9.6:5, Figure 9.7:1). This type of vial is also found in Margiana made of other materials such as ceramic, alabaster, and bronze. These vials are known from the looted tombs of Bactria with bronze pins in them, and thus have been described as perfume bottles (Pottier 1984).

These small vials only occur in Margiana Period 2. This permits a chronological subdivision of the serie recente style into an earlier period and a later period, the later including these distinctive vials. The distribution of Central Asian and Gulf serie recente objects suggests shifting second millennium contacts (alliances?) between the Gulf, Iran and Central Asia (Hiebert n.d.).

Tall footed alabaster 'cups' are found from Namazga IV to the BMAC (Figure 9.6:6). The stand of the cup becomes thin and elegant, but the basic form is the same over time. The Namazga IV cups had perforated lids and they may have served as lamps. Tall alabaster cups become incorporated into the new assemblage of the BMAC and are commonly found in the export contexts of the BMAC.

Turned alabaster bowls are also common in Margiana as part of a continuous tradition (Figure 9.6:7,8). Interestingly, a type of trough spout found in Period 1 and Period 2 ceramics is also made in Period 2 in alabaster, as

if in imitation of the ceramics.

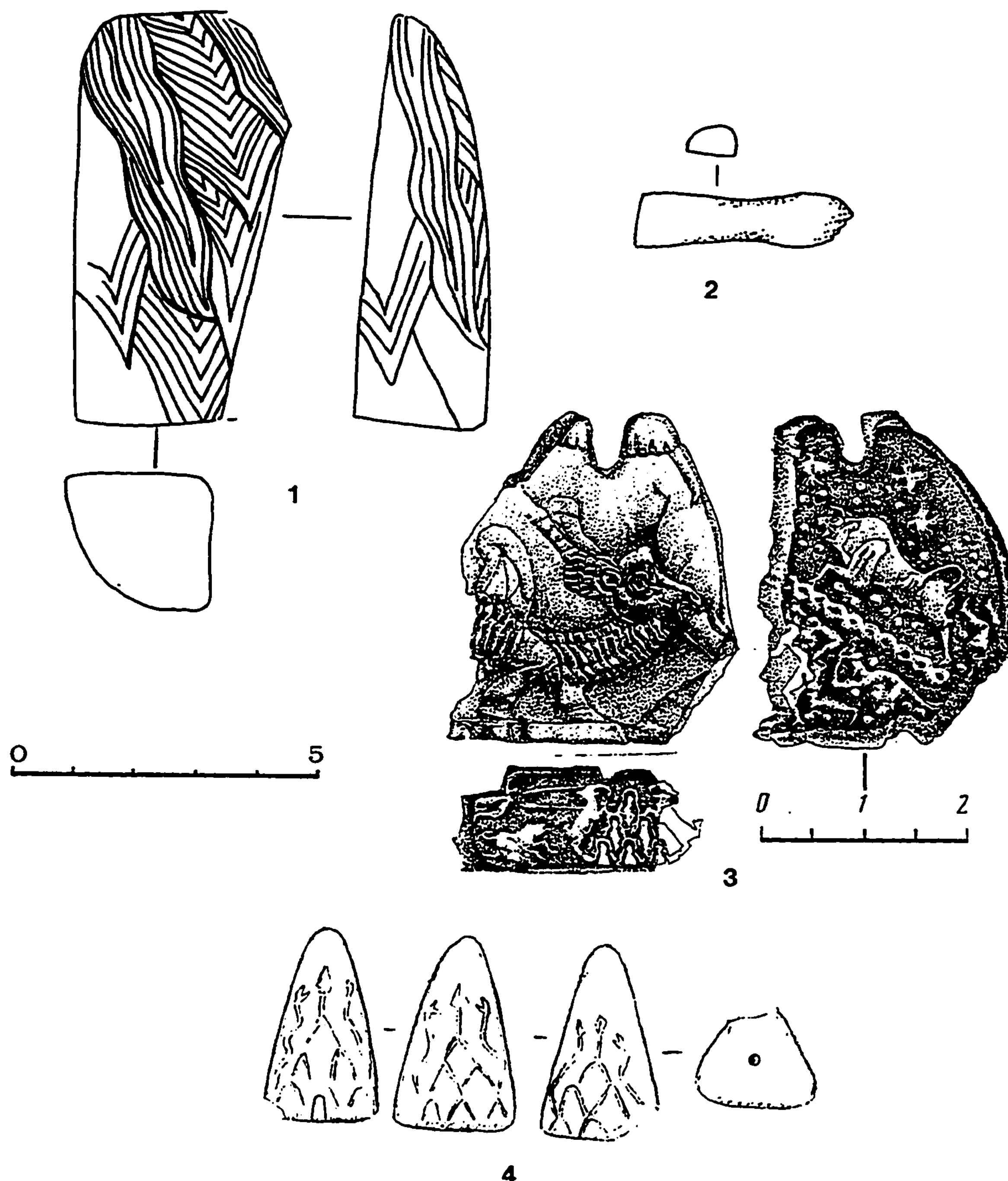
Alabaster vials have both square and round bases and incised line decoration. Alabaster vials similar to the steatite forms were also produced or decorated in Margiana in Period 2 (Figure 9.7:2).

Stone figurines, and amulets and seals Period 2

Figures, small amulets and seals made of steatite and alabaster are found in Margiana in Period 2. They are a distinctive feature of the BMAC.

Stone figures include human and small animal figures carved in the round. Composite multi-part human figurines are made with a steatite base and a head and arms of a white stone, usually alabaster. These are best known from the looted tombs of southern Bactria (Ligabue 1989, Pottier 1984), although they have only been found in secure stratigraphic contexts from Margiana (Figure 9.8:1,2). The possibility that they were produced in Margiana is suggested by a fragment of a steatite figurine found at Togolok 21 in a room with other steatite production debris.

Period 2 sites in Margiana have a range of small alabaster and steatite figurines including a bull's head, an artfully carved steatite amulet in the form of a camel (Figure 9.8:3)(Sarianidi 1989), and a range of other animals typical of the oasis environment, such as frogs and boar. Amulets (and some of the bronze seals as well) from Bactria



Period 2.
Figure 9.8: Stone figurines: 1) fragment of body, grey steatite carved in fleece pattern, Togolok 21, Room 148, 2) unattached arm from a stone figure, white stone, 3) reddish steatite, Togolok 21, south court, 4) dark grey steatite, Togolok 21, Room 65.

may also have images of mountain goat, monkeys, and bear (Figure 9.8:4)(Sarianidi 1981b). These animals are native to the foothills and mountains of Afghanistan and reflect the proximity of the Bactrian oasis sites to these areas.

Amulets of the "Murgab style" (Sarianidi 1981b) are carved in steatite and alabaster have designs on the two sides, and were often pierced for a string (Figure 9.9:1). They are not found only from Margiana, and many are known to have come from Bactria (Sarianidi 1986c). Other amulets common in Margiana Period 2 have a stepped diamond shape (Figure 9.9:2). The stepped design is traditional in Central Asia, where it is found on the painted ceramics from Namazga IV times and on carved stone beads, censurs, and disks from Namazga IV levels of Ulug depe. The stepped diamond amulets in Margiana are made of steatite and alabaster and have carved decoration on either side (Figure 9.9:2). One found at Harappa (seal #255, pl.XVI, Vats 1940) from the upper level most likely comes from Margiana or Bactria.

Imprints of stepped diamond amulets and of steatite or metal seals have been found on oval and round bullae. One bullae from Gonur south is oval with a hole for a string, very similar to the much later Parthian and Sasanian bullae. Bullae from excavations at Gonur-1 and Togolok-21 are evidence for an emerging hierarchy and control system that will characterize the oasis from this time onwards.

Two piece amulets have been found on most Period 2

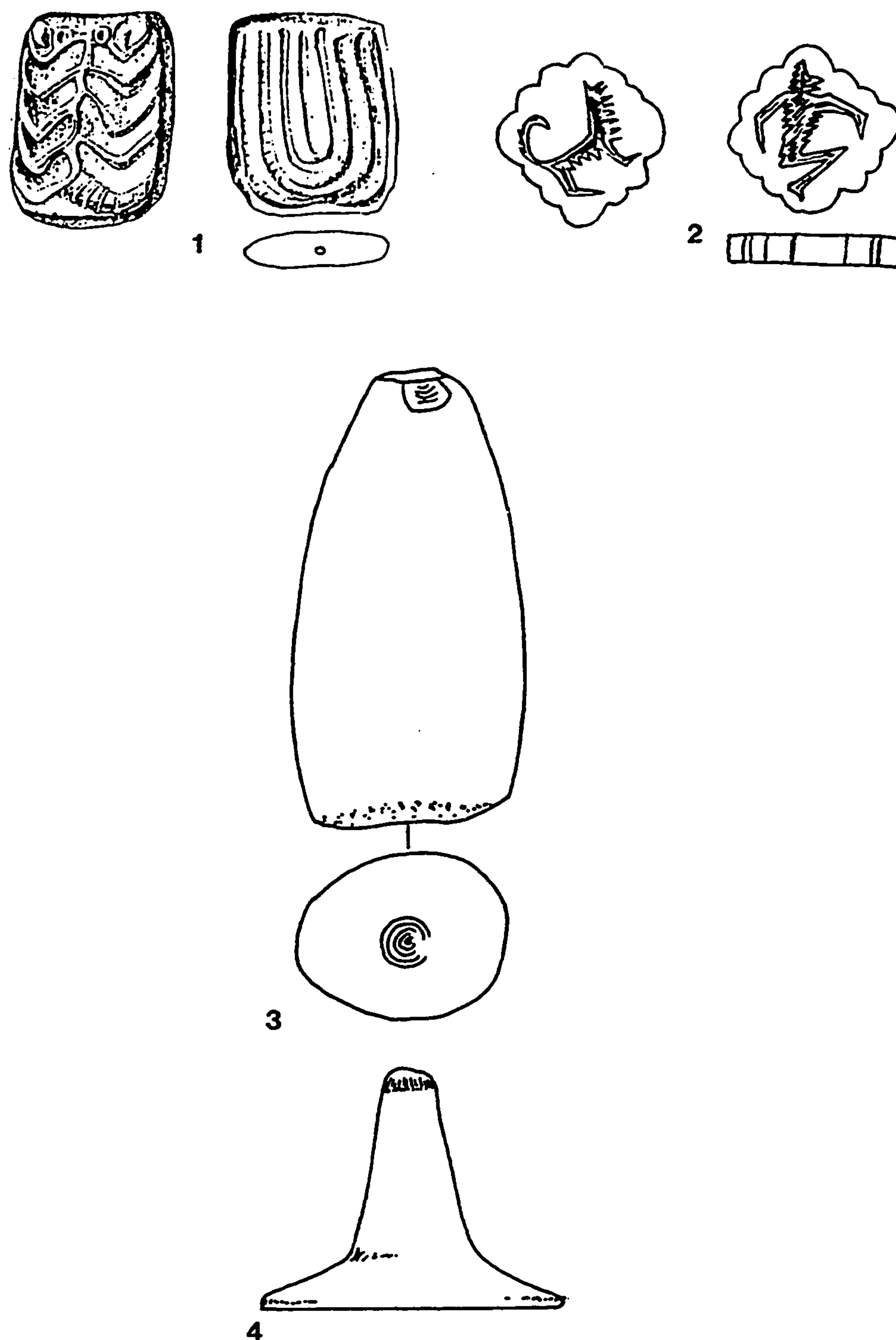


Figure 9 10: 1) Reddish steatite, Togolok 21, surface,
2) reddish steatite, Gonur south, room 262,
3,4) upper stone white crystalline stone pecked on the bottom with a polished divot, lower stone, black steatite.

sites. The egg-shaped upper stone of white alabaster is supported by a black steatite support base (Figure 9.9:3). The stones are highly polished highlighting the contrasting colors of the materials. These two piece amulets do not have engraved decoration, and the carefully polished materials and contrasting colors seem to emphasis the value and meaning of the imported materials themselves.

There are several types of stone seals, including those that appear to be imitations of metal seals, and others such as the cylinder seals that are a completely new form in Central Asia. The stone seals are made primarily of steatite and alabaster and have both drilled and incised designs similar to the amulets. These continue a tradition of metal "seals" and amulets (although no stone seals have been found on Period 1 sites) as well as stone beads from Period 1 in Margiana and from the foothill region. Unfinished examples of seals have been found in Period 2 of Margiana confirming that the 'local' form of steatite seal is indeed produced (or finished) in Margiana (Figure 9.10:1,2).

The cylindrical seals have vivid designs around the cylinder and a motif on the base with a loop boss carved on top (Figure 9.10:3). Such seals are reminiscent of later eastern Mediterranean (Mitanni) tradition seals (Salje 1990). The carving on the base is similar both in technique of carving and in motifs to the locally manufactured round amulets. Impressions of the cylinder seals have been found

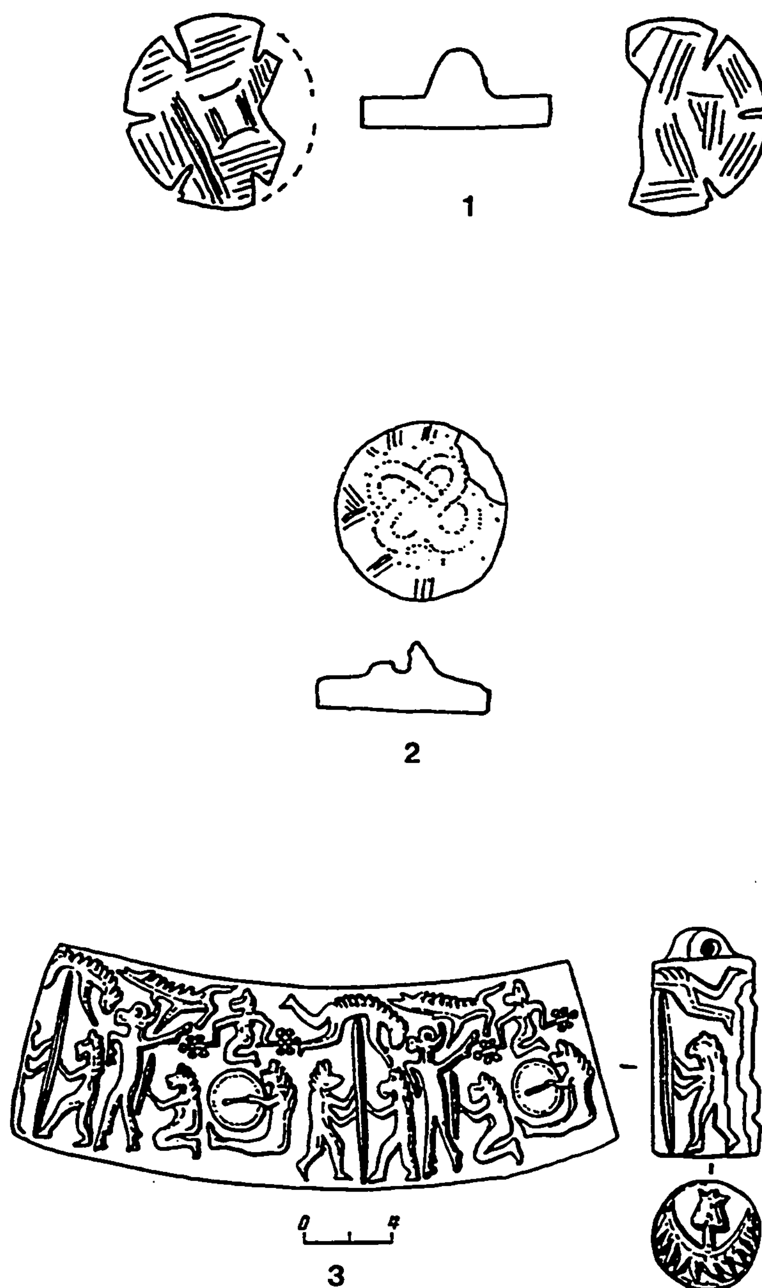


Figure 9.10: Period 2. 1) unfinished steatite seal, saw marks visible on each side, Togolok 24, Burial 40. 2) unfinished red steatite seal, Togolok 21, surface. 3) steatite cylinder seal, Togolok 1, Burial 10 (Sarianidi 1989, fig 5).

on locally produced ceramics from Taip and from Gonur-1, south (see Figure 4.32:3 in Chapter 4). Imprints of cylinder seals on the ceramics made prior to firing may indicate their use in the control of production.

The BMAC seals appear to be used as part of a system of administrative control of trade and production in a fashion similar to seals 1000 years older from Mundigak and Shahr i-Sokhta II (Ferioli, Fiandra, and Tusa 1979) and at Shahdad (Hakemi 1977) where seals were stamped on pottery prior to firing. There is a long period when such seals are not made following the Shahr i-Sokhta II period. The function of the seals appears to be a reemergence of this older pattern, while the motifs and designs found in the BMAC are distinctly new.

'Miniature columns', staffs, and maceheads Periods 1&2

'Miniature columns' are found at Bronze Age sites on the Iranian plateau, in Central Asia, and in South Asia. These distinctive artifacts are made of limestone, alabaster, marble and steatite which have been carefully carved, grooved and polished (Figure 9.11). The earliest example from secure excavated context is from Kara depe in the eastern foothill zone of the Kopet dag (late Namazga III/early Namazga IV) (Masson 1957). They occur in Period 1 in Margiana as well as in room and tomb contexts of Period 2 (BMAC). They are often part of BMAC assemblages found

Figure 9.11: Miniature columns from Togolok 21, (Sarianidi 1990:pl.LXXXIX).

1) Black steatite, side gouged out where something was attached to it. Grooved top and bottom, Room 16.

2) Black and white mottled marble, grooved top and bottom, top fragment from Room 56, bottom fragment from Room 39.

3) Dark red marble with white veins, grooved top, Room 2.

4) Grey salt and pepper granite, grooved top and bottom, Room 7

5) Yellowish pink alabaster, grooved top and bottom, Room 25.

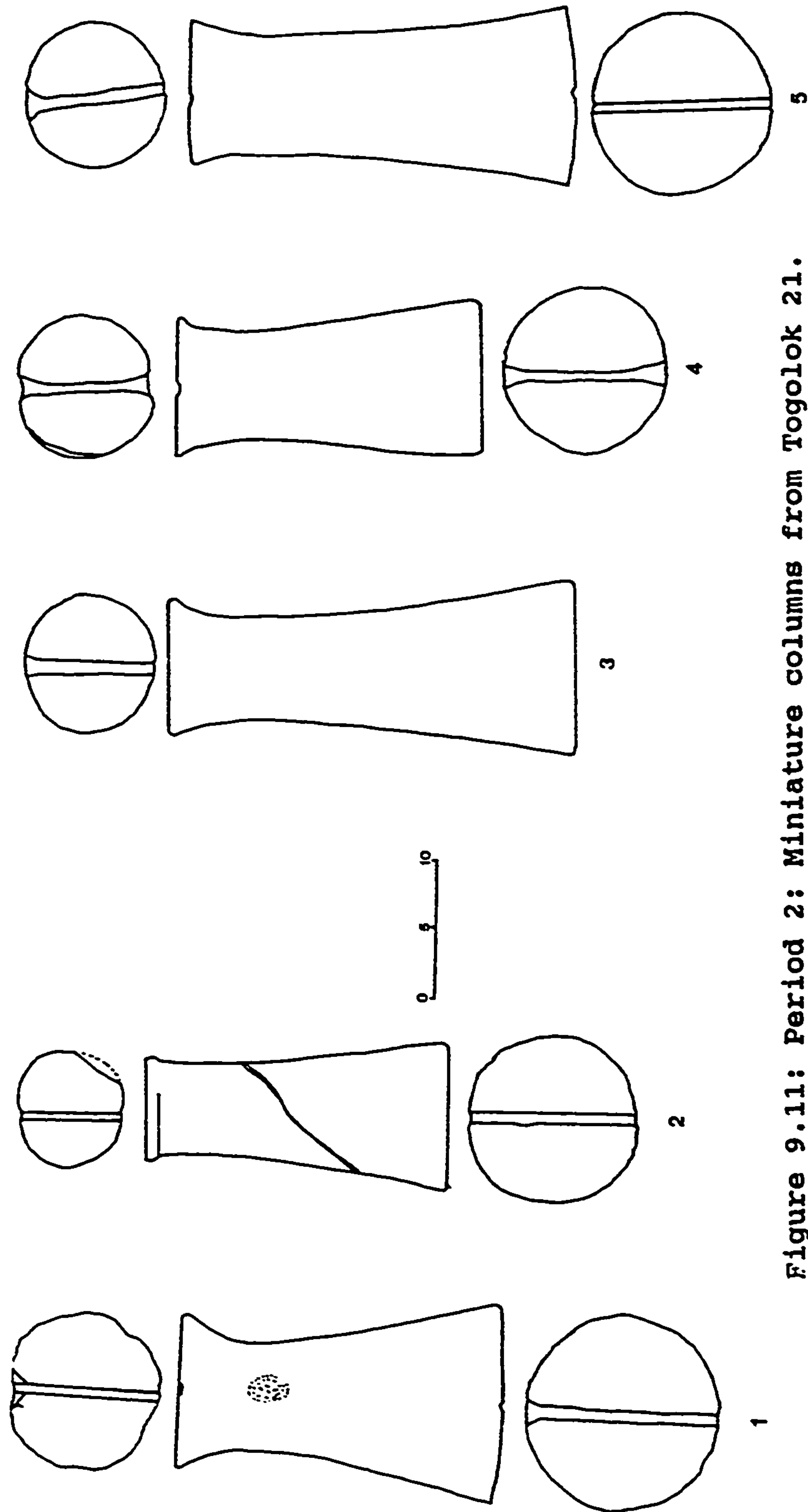


Figure 9.11: Period 2: Miniature columns from Togolok 21.

outside of Central Asia. Due to their high degree of polishing and working they appear to be ceremonial in function. However, the possibility that they functioned as weights must also be considered and they should be weighed.

Twenty-nine whole and broken columns were found in the Central Building at Togolok 21; this is the largest group of columns from a single site. The distribution of the columns in the building does not show clustering in any room or area (Figure 9.12). While some columns were found on floor surfaces, it is quite possible that others came from secondary deposits, such as one broken column the pieces of which were found in two separate rooms.

Several of the Togolok-21 columns were found sawed in two pieces, with the ends polished and the two parts kept together. It is not clear why the columns were cut. The sawed portions may indicate that the columns were being modified at Togolok-21. Despite the fact that no stone debitige was recorded from these excavations, other unfinished steatite objects from Togolok-21 indicate that some stone working was being done at the site.

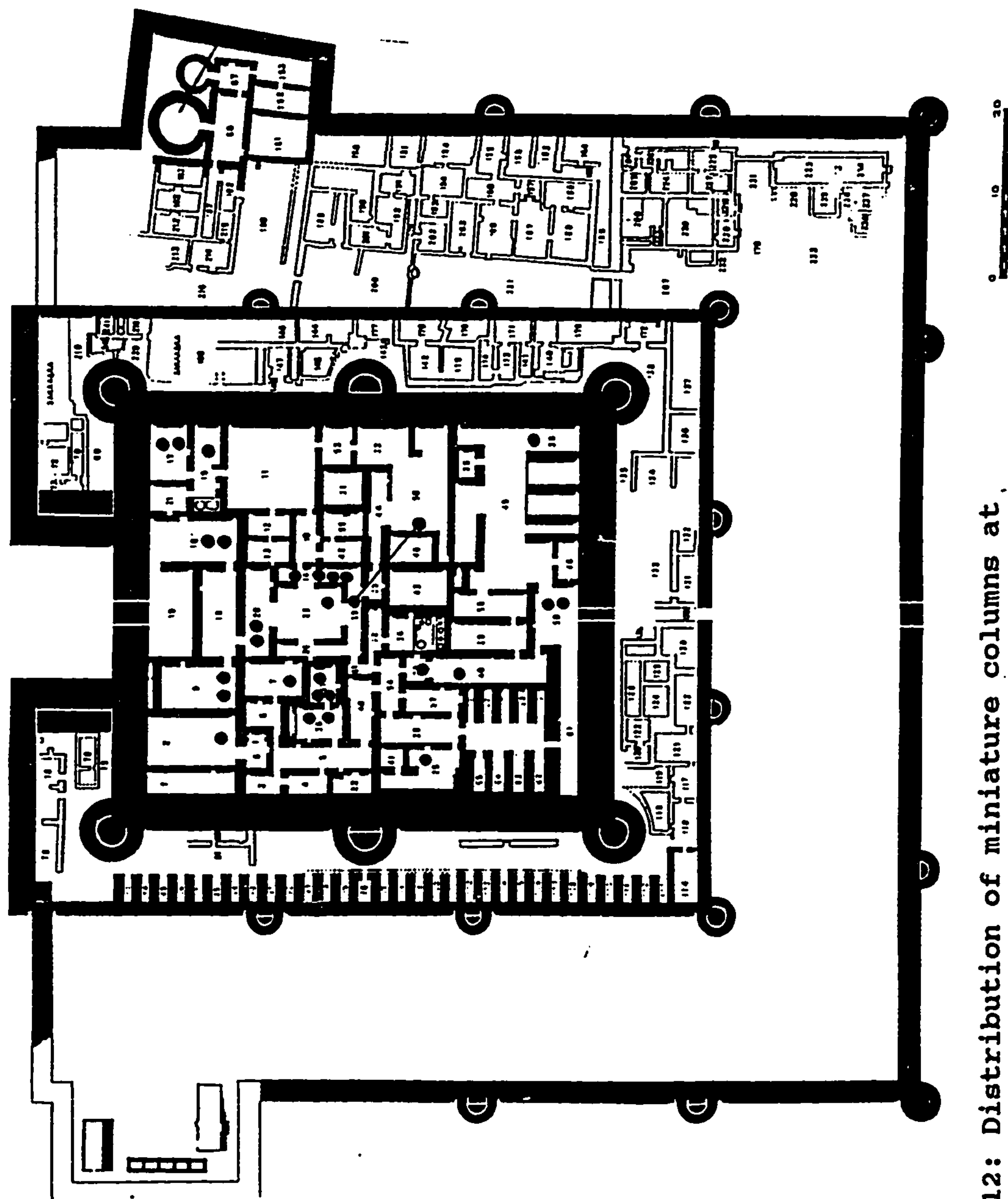


Figure 9.12: Distribution of miniature columns at Togolok 21.

The columns from excavated context at Togolok-21 range in height from 16 cm to 29 cm. The unbroken columns seem to have been manufactured in pairs of similar size, although none have been found in pairs from burials.

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                                                    X
X                   X X     X     X X       X X X X X
_____________________________________________________
I I I I I I I I I I I I I I I I I I I I I I I I I I I
16  17  18  19  20  21  22  23  24  25  26  27  28  29
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Height in cm of complete columns from T-21

Several of the similar sized 'pairs' have contrasting colors such as black and white. A similar 'pair' of black and white columns was found in a burial deposit at Quetta (Jarrige and Hassan 1989).

If the columns were paired, then perhaps the grooves supported a bar or staff in a fashion similar to later Iranian ritual objects such as the barsom mentioned in the Avesta (Boyce 1984).

Miniature columns in the BMAC often occur with stone staffs. Staffs (or "sceptres"- Jarrige and Hassan 1989) made of marble, alabaster, and schist have been found in many Central Asian burials from Bactria and from the foothill zone. Fragments of schist staffs have been found in architectural context in Margiana from both Period 1 (at Gonur) and Period 2 (at Togolok 21). These are the first

architectural contexts documented for the stone staffs. While the staffs are part of the BMAC found in Bactria, Margiana, and in BMAC assemblages outside of Central Asia at Hissar, Shahdad, Mehrgarh and Quetta, it is clear that they were incorporated into the new assemblage from the earlier Namazga V assemblages of the foothill (such as at Altyn depe Burial 362) and Margiana Period 1.

Round stone mace heads, like the stone staffs, are part of the complex of Bactria and Margiana Period 2, which stems from an earlier tradition. Plain stone mace heads are found in Period 1, whereas in the BMAC they are typically ornately carved (Figure 9.13). In Bactria, maceheads are also made of bronze and even lead and are associated with the staffs and miniature columns.

In the BMAC, miniature columns, staffs, and maceheads appear to have been important symbols, beyond whatever utilitarian function they also might have had. While each of these objects has been found in earlier contexts, they are grouped together for the first time in the BMAC both in burial and architectural contexts, and probably were incorporated as a set into the BMAC cultural system. Given the difficulties in acquiring and transporting these objects, they would represent considerable value in the oasis context. In this regard, the evidence of stone finishing and the large assemblage of stone objects attest to the central place of Togolok 21 in Period 2 of Margiana.

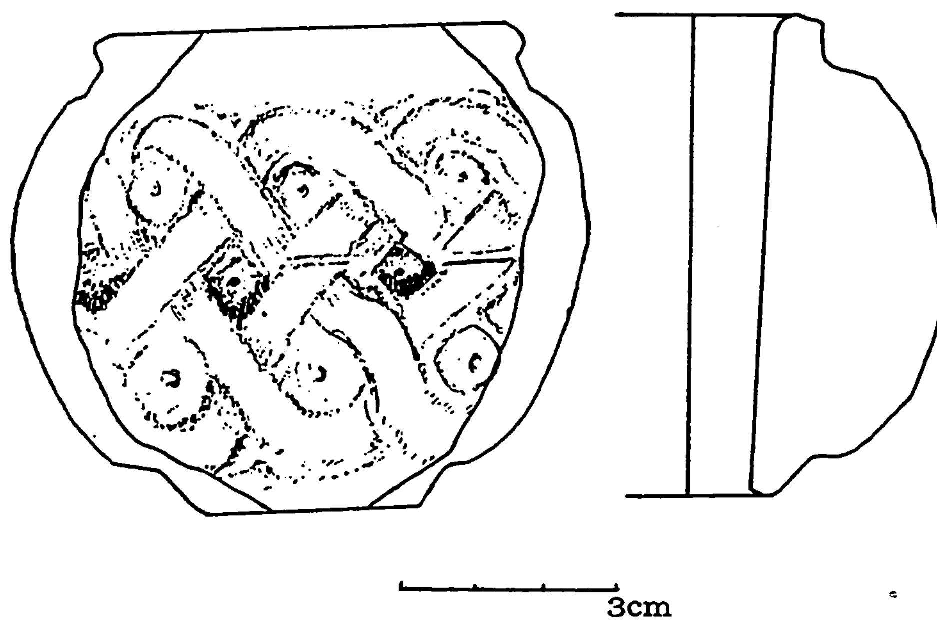


Figure 9.13: Period 2: Carved steatite macehead, Togolok 21, Room 11.

Grinding stones and stone 'pocket books' Period 1&2

Stone 'pocketbooks' are oval or round stones with a hole through the top which serves to form a loop or a handle. These are close in size and shape to weights from warp-weighted looms for weaving. Similarly shaped stones are illustrated in weaving scenes from Egyptian tomb paintings (Davies 1929); and traditional warp weighted looms from Iran have weights (kiseh) of the same shape as the 'pocketbooks' but made of sand filled bags (Wulff 1966). Warp weighted looms are primarily for the manufacture of cloth (not carpets).

Undecorated stone 'pocketbooks' have been found in Iran and in Central Asia from the third millennium (NMG III/IV) (Sarianidi 1961). Briefly, during the mid third millennium ceremonial steatite 'pocketbooks' were ornately carved in the intercultural style (Pittman 1984). This presumably ceremonial use appears not to have survived to the transformation of the late Bronze age. Most of the Central Asian examples, including all from Margiana and Bactria, are undecorated and found in domestic contexts.

Large grinding stones are found on all of the sites of Margiana as well as the polished hand stones and pestles. In Margiana, many caches of these have been found, as if they were hidden together before being abandoned. They are made of basalt, limestone, and sandstone, the closest sources of which are over 200 km away in the foothills of the Kopet dag

mountains (Encyclopedia of Turkmenistan 1984). The numerous grinding stones and 'pocketbooks' found on every site in Margiana, in total, represent an enormous quantity of stone imported to the desert oases.

Chipped stone Periods 1&2

Chipped stone arrow points are part of the Central Asian Bronze age tradition despite the occurrence of bronze points in the same deposits. The stone points have been found in all agriculturally based sites of the Bronze Age and are not necessarily indicative of a separate hunting or nomadic group. Several points have been found from architectural contexts, and there appears to be a slight stylistic difference between the points of Period 1 and 2.

Distinctive ripple flaked points have been found in Period 1 of the Gonur kremel. In addition many of these points have been found from the surface in the area of Gonur. The points are similar to points found at Altyn depe from the upper levels (Masson 1988). The total lack of debitage at Gonur (even with fine screening) indicates that finished points were imported.

5. METAL OBJECTS

Bronze, copper alloy and other metal objects and fragments are common in Margiana. Over one hundred metal fragments have been found in situ from building levels at

Gonur in a wide variety of forms and styles, indicating a rich metallurgical tradition in the desert oases.

The Period 1 bronze and copper alloy objects are less frequent and varied than those of Period 2. Some of this difference is due to the location of production areas within the building in Period 2. It is possible that metal working areas of Period 1 will be found in Margiana in separate workshop areas, similar to the Namazga V workshop areas in Excavation 9 at Altyn depe (Masson 1981).

Decorated bronze and copper alloy objects are an important part of the BMAC assemblage, both in the oases areas and found in BMAC burials outside of Central Asia. The attribution of these objects to the BMAC is only possible from the examples from excavated contexts. A collection of bronze and copper alloy and lead objects from the excavations in Margiana are presently under study at the Peabody Museum; This has allowed me to characterize the Period 1 and the Period 2 metal assemblages. The metal objects from Margiana can be divided into 1) tools and weapons and 2) ornaments and ceremonial objects.

Period 1

About half of all excavated objects from the Period 1 metal assemblage at Gonur are tools or household objects. Blades include knives and spears. From the excavations at Kelleli 3 and 4 (Masimov, unpublished notes) and from Gonur

kremel (Sarianidi 1990) have come undecorated bronze and copper alloy pins, a lead spinning whorl, several "adze" type blades, and a long handled bronze vessel.

Geometric seals, bracelets, and earrings from Period 1 at Gonur north (kremel) are similar to those from the BMAC. The bronze pieces cannot be assigned to period on the basis of style, only on the basis of excavated context. However, according to Terekhnova's analysis of metal composition, Margiana Period 1 artifacts include some which are alloyed with tin (Terekhnova 1990). Tin bronze has not been found among a sample of 25 bronze and copper alloy objects from excavated contexts from Margiana Period 2 (Hiebert and Killick 1991). Most likely this compositional difference indicates a shift in area of origin of the metal ore from Period 1 to Period 2. This is consistent with Margiana's shifting ties from the Kopet dag foothill zone in Period 1 to the oases of Bactria in Period 2.

Period 2: the BMAC

Half of the metals from Period 2 are also tools or household objects. Blades include knives, spears, arrow points and "razors". There are more tool types than in Period 1, and the types include tools involved in production of other objects. In Period 2 architecture were found with tools such as drills, chisels, punches as were part of the local production complex. Some tools which show signs of use

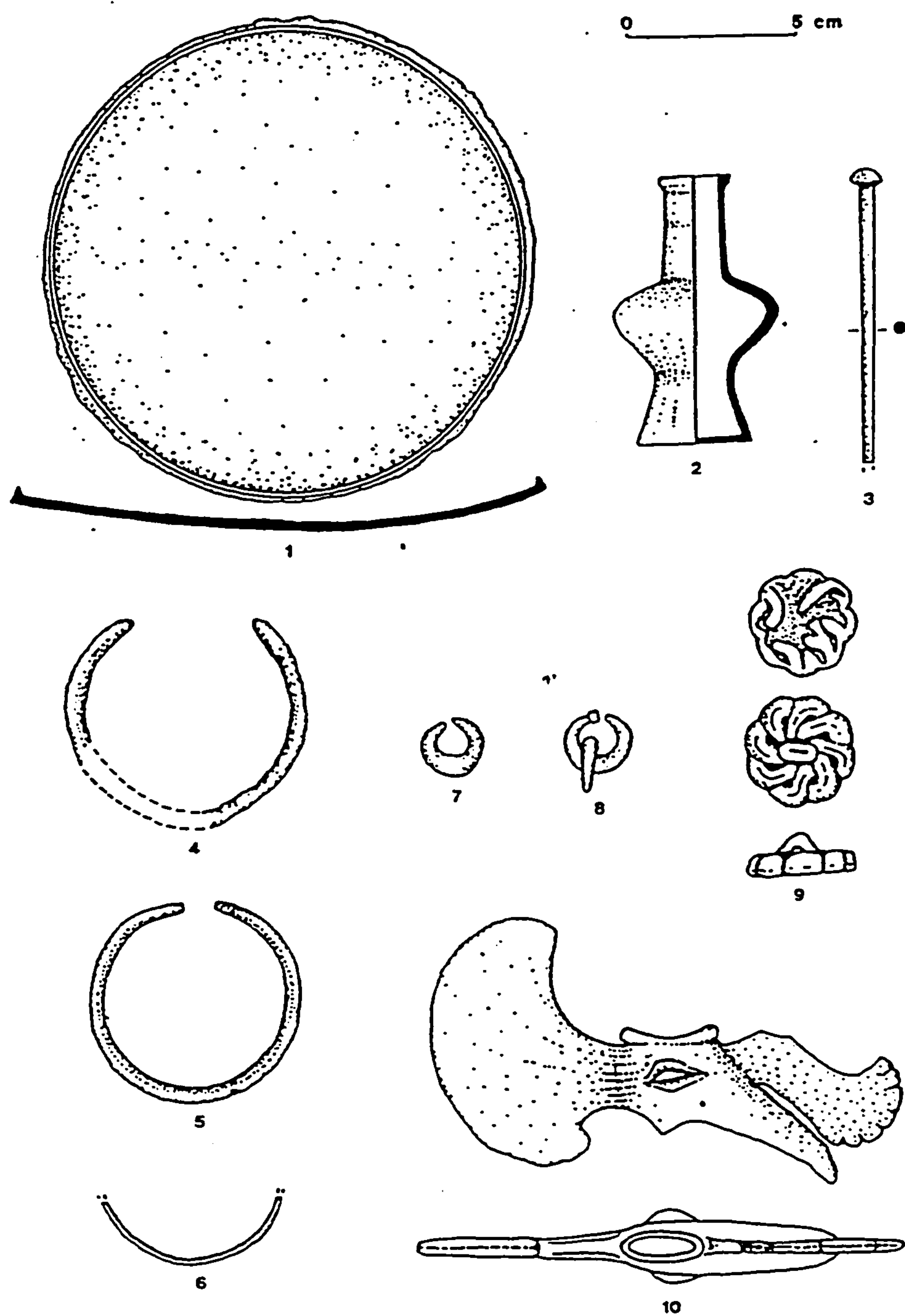


Figure 9.14: Period 2: Copper alloy objects from Margiana.

Fig No.	Artifact	Site/ Context	Technical Analyses	Technology
1.	Mirror	Gonur burial	----	Cast
2.	Small jar	T-24 burial	----	Cast
3.	Decorative pin	Gonur arch	Metallographic	Cast, lightly forged and annealed
4.	Bracelet	T-24 burial	Metallographic EDAX	Cast, thoroughly forged and annealed
5.	Bracelet	T-21 burial	Metallographic	Cast, lightly forged and annealed
6.	Bracelet	T-21 arch	Metallographic	Cast, thoroughly forged and annealed
7.	Earring	Gonur-1 arch	Metallographic	Cast, thoroughly forged and annealed
8.	Earring	T-1 burial	Metallographic EDAX	Cast, then forged and annealed several times
9.	Seal	Gonur-1 arch	----	Cast
10.	Axe	Gonur-1 burial	----	Cast

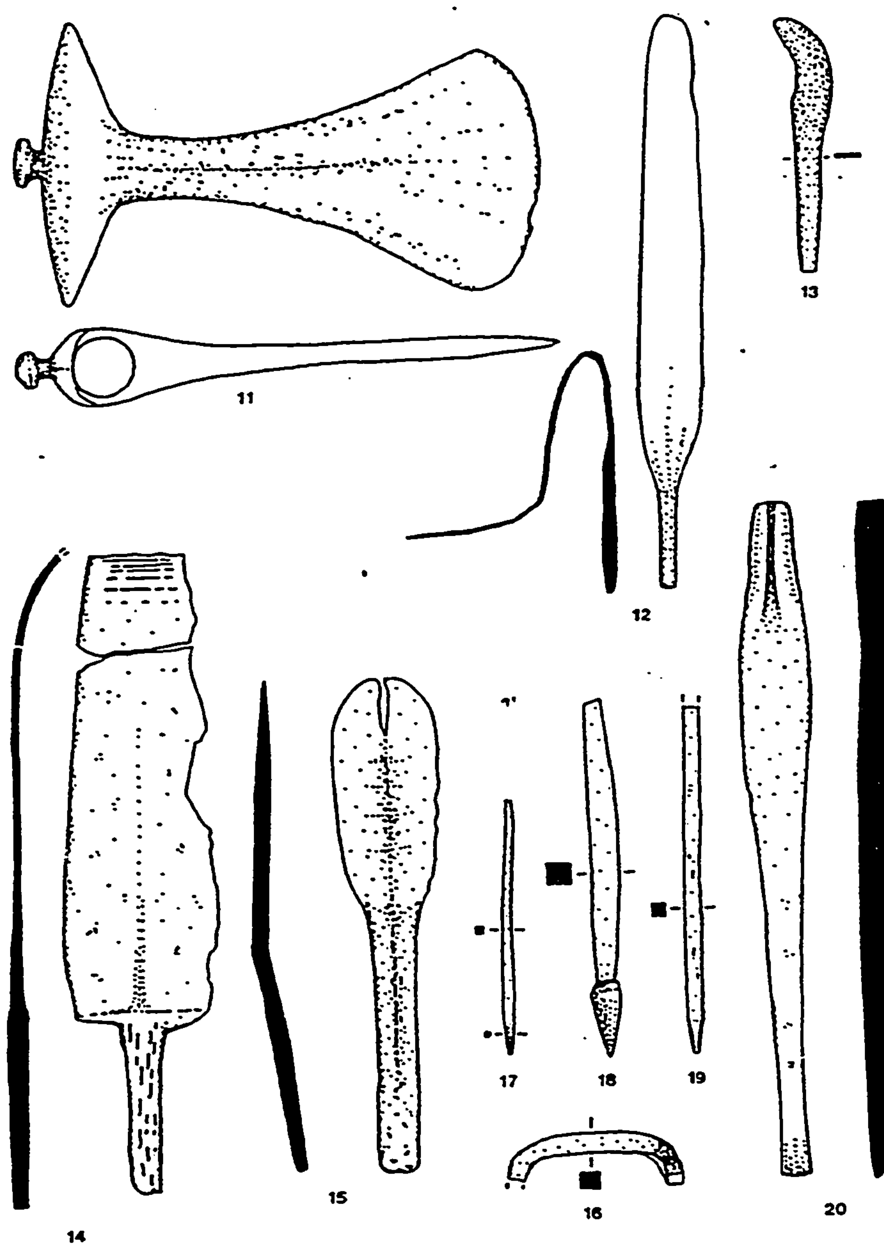


Figure 9.15 (cont): Period 2: Copper alloy objects from Margiana.

Fig No.	Artifact	Site/ Context	Technical Analyses	Technology
11.	Axe	T-21 arch	----	Cast, edge ground sharp
12.	Spear or Knife blade	T-1 burial	Metallographic	Cast, then forged and annealed several times; final cold-working
13.	Knife or "razor" blade	Gonur-1 arch	----	-------
14.	Knife blade	T-21 burial	Metallographic EDAX	Cast, lightly forged and annealed
15.	Spear or knife blade*	Yaz depe arch	Metallographic EDAX	Cast, very lightly forged and annealed; final cold-working
16.	Punch (?)	T-21 arch	Metallographic EDAX	Cast, thoroughly forged and annealed
17.	Drill	T-21 arch	Metallographic EDAX	Cast, extensively forged and annealed
18.	Drill	T-24 burial	Metallographic	Cast, lightly forged and annealed
19.	Drill	T-21 arch	Metallographic	Cast, thoroughly forged and annealed; final cold-working
20.	Chisel or pick	T-1 arch	Metallographic EDAX	Cast, extensively forged and annealed, cold worked

* Sample comes from Iron age rather than Bronze age deposits

are from burials; as an example is the drill found in a BMAC burial at Togolok-24.

The ornaments include cosmetic vials and pins, mirrors and decorative pins, bracelets and rings, and fragments of compartmented and geometric seals. In general the jewelry and ceremonial objects were found primarily in burials; some examples, however, were also found on floors in buildings and in midden.

As with the stone artifacts, regional differences between Bactria and Margiana appear to reflect proximity to resource areas rather than directly reflecting status. In Margiana, no jewelry has been found made of gold or silver, however, lead ornaments and jewelry were used. This is in contrast to the burials from southern Bactria, which have objects of similar form, but made of gold, silver and electrum. Further compositional analysis of copper alloys from the area of the foothill, Margiana and Bactria will provide the best indicator of interaction between these three regions.

Small bronze and copper alloy vials are found in northern and southern Bactria, in association with decorative pins or sticks. The vials from Margiana differ in form from those found in Bactria, reflecting regional differences in the shape of vessels between Bactria and Margiana. This suggests local centers of metallurgical production, as opposed to itinerant metallurgists. It also

emphasizes the lack of exchange of finished objects between oases despite the fact that the raw metal (apparently as ingots) probably came from the Hissar mountains near the northern Bactrian oases.

Pins with decorated ends are often found associated with small bronze and copper alloy jars (Amiet 1989, Salvatori 1989). Round finials are most common in Margiana at Gonur and Togolok. Pins with animal forms or body parts are more common from the Bactrian sites of Sapalli and Djarkutan (Askarov 1977).

A very common feature of the BMAC assemblage of metals are the bracelets and earrings. Bactrian variants of the bracelets have twisted decoration, and the ends are sometimes in the form of snakes heads (Askarov 1977). These are features which are evocative of later Iranian bracelets of Luristani and Achaemenid types.

Bronze and copper alloy and lead earrings are common in BMAC burials in Margiana. The lack of these items in gold and silver is in contrast to BMAC assemblages found in burials and in hoards from Iranian plateau sites such as Hissar.

Bronze and copper alloy stamp seals are a distinctive feature of the BMAC. There are two broad categories of seal forms: 'compartmented'- open backed with the design soldered on; and 'champleve'- closed, most likely wax cast, with the design cast and gouged out (Amiet 1989b).

From Period 2 in Margiana are found geometric and figurative seals, made both in the compartmented and the champleve technique. The geometric seals are stylistically undifferentiated from that of Period 1. Bronze stamp seal impressions are found on Period 2 pottery, stamped prior to firing. This is a practice similar to that with the stone seals, indicating a similar function.

Bronze and copper alloy axes from Period 2 contexts in Margiana and Bactria are of the cast shaft-hole variety. They have a zoomorphic form most typically with a prominent eye motif on each side and a tail or a beak (see the axe from the cenotaph illustrated from the excavations at Gonur south in Chapter 7). In Margiana these axes have been cast but not hardened for use and thus are considered to have been ceremonial in nature.

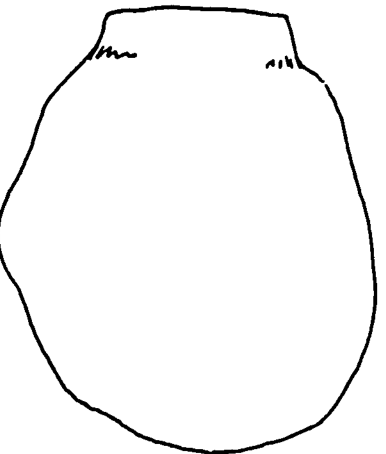
Such axes are found in both in burial contexts and in monumental architecture in Bactria and Margiana. They are also found in BMAC assemblages outside of Margiana and Bactria, such as at Shahdad and Khinaman.

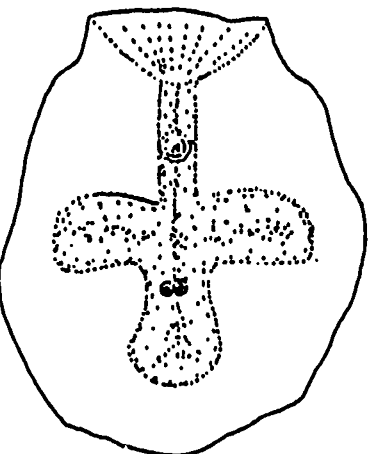
Axes from Bactria are similar to the Margiana type, but are more elaborate, with designs of animals and dragons similar to BMAC amulets. These axes are best known from plundered tombs of southern Bactria which include gold and silver chased examples (Ligabue and Salvatore 1989).

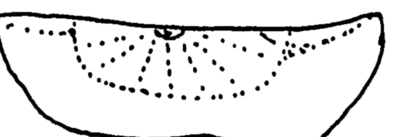
While undecorated bronze and copper alloy shaft-hole axes have been found in the greater Near East and Central

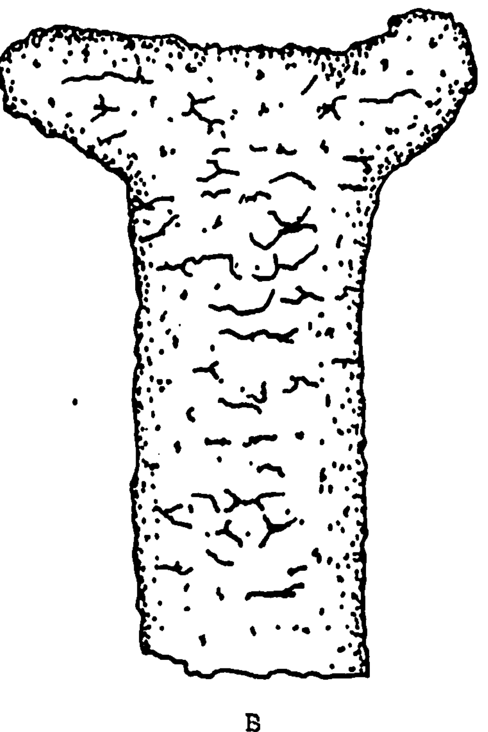
Asia from the beginning of bronze weapon use (Deshayes 1960), the distinctively decorated bronze and copper alloy axes found in Margiana Period 2 are restricted to the BMAC period in Central Asia and are part of BMAC assemblages found in surrounding areas.

The distinctive styles of metal objects from Margiana Period 2 suggest local manufacture of the objects. In addition there are several direct indicators of local metallurgical production, most notably a copper ingot found in BMAC levels at Gonur South in 1990 (Figure 9.16:2). This, together with a metal casting mold found on the surface at Gonur (Figure 9.16:1) indicate that casting occurred at Gonur. The mold has the form of an eagle engraved on it. Very similar cast eagles adorn the rim of a well known metal vessel of the BMAC style (Pittman 1984:no.30).









B



Figure 9.16: 1) stone mold for casting metal, in the form of a bird, Gonur north, surface
2) Copper ingot, Gonur south, Room 141.

THE BACTRIAN-MARGIANA ARCHAEOLOGICAL COMPLEX

Origins of the BMAC

Artifacts that are distinctively embellished probably have public and symbolic meaning and can be characterized as 'ceremonial'. It is these objects that show the transformation of culture in Margiana and the development of the BMAC.

In Period 1, violin-shaped figurines are the predominate ceremonial artifact. In the transformation to the BMAC, this tradition comes to an end, despite the clear overall cultural continuity between Period 1 and 2. Other motifs also change abruptly or disappear, an example is the occurrence of the goat and tree motif found on Period 1 ceramics. This change in ceremonial images is a reflection of culture change within the continuous development in Margiana.

Stone staffs, disks, and miniature columns are also found in Period 1, usually individually or in graves. These objects are incorporated into the BMAC, as indicated by the different grouping of these objects together in both architectural and burial contexts. The incorporation of these objects possibly indicates redefinition, and the adding of new cultural meanings to them.

It is also important to mention that Period 1 has bronze axes, maceheads, and stone and bronze seals. Such items are

transformed in Period 2, where several maceheads from both Margiana and Bactria are ornately carved, and decorated bronze or copper alloy axes are found. The ceremonial aspect of axes in Period 2 is clearly seen in the non-functional bone axes found in burials and cenotaphs of the BMAC.

Motifs on stone, bronze and copper alloy seals (which come from a foothill tradition) become diversified in Period 2. Motifs include animals, humans, dragons, and some narrative 'scenes'. Amulets made of terracotta, bone, stone, copper alloy (or bronze) may be indicators of individuals identifying themselves as part of the BMAC.

The nature of the BMAC

BMAC stylistic elements are shared in the areas of the desert oases of Margiana, and in northern and southern Bactria. The new artistic and iconographic symbols on the artifacts refer to the desert environment with common images of snakes, scorpions, desert plants and the oasis with images of camel, sheep and goat. There are even amulets in the shape of seeds. In addition to the imagery, the raw material itself appears to have cultural meaning. Raw materials for objects appear to have been chosen to display contrasting colors, such as pairs of alabaster and steatite miniature columns, the two piece steatite and alabaster objects, and the distinctive black and white coraliferous limestone imported from southern Iran along the Persian

Gulf. It is also characteristic in both Bactria and Margiana to copy an object in a radically different medium (bone to stone, metal to bone, metal to ceramic, etc.).

The large and rich iconography including zoomorphic, anthropomorphic, and geometric designs appears to have developed out the earlier Margiana tradition. Sarianidi has documented Bactrian (1977) and Margiana (1990) variants of the style in terms of animal depictions, geometric motif frequencies, types of imported materials, and richness of material culture. There is a specific Margiana local style as well as a regional style found on all of the Bactria and Margiana sites. Of great interest are the small differences in the BMAC style of artifacts from the oases of Margiana, southern Bactria and northern Bactria. These indicate that while there was a high level of information flow between oases, there was little actual exchange of artifacts.

The BMAC assemblage of artifacts (with typical Period 2 type ceramics) is also found well outside of Margiana and Bactria in Iran and South Asia at contemporary sites such as Khinaman, Khurab, Sibri, Mehrgarh, Quetta, Shahdad, Hissar and Fullol. This "export version" of the BMAC is typically found grouped together in burials as a complex within the context of a completely different material culture. This is true whether in Iran (Hiebert and Lamberg-Karlovsky 1992), the Levant (Mazar 1990), or South Asia (Jarrige 1989). On the basis of the refined ceramic typology and the definition

of BMAC objects, this assemblage outside of Central Asia can be interpreted as a clear indication of the movement of Central Asian people, probably for resource acquisition through conquest or trade. Ironically, because of the late chronology used by the excavators of the Central Asian sites, the finds of Central Asian artifacts far outside of Central Asia have been perceived as antecedents of the BMAC and thus evidence of long distance migrations into the desert oases.

Production

BMAC style artifacts are produced in Margiana. Evidence of this is provided by the occurrence of unfinished artifacts of these types on the Margiana sites. Many BMAC small finds are produced on materials not found in the desert, and production or 'finishing' areas are found in most BMAC building complexes. In the future it would be interesting to focus collaborative excavations on the production areas. Along with Gonur depe-- which has evidence for metal and steatite working- there is evidence of steatite and alabaster working at Togolok 21. Copper alloy casting occurs at Togolok 1 (Sarianidi 1990) as well as on many sites in northern and southern Bactria (Askarov and Shirinov nd). In addition, bronze and copper alloy tools for working other materials are found at every BMAC site.

As suggested in the analysis of the Period 2

architecture at Gonur (Chapter 8), with that period production becomes based inside the building complexes themselves. The type of production that develops can be best compared to the oikos model. The fundamental unit of oikos production consists of members of an extended family or clan (here, all living within the qala). The appearance of bullae and stamp and cylinder seals marking the bullae indicates the emergence of a new level in the hierarchy of the qala economy seen in the local control of production.

Indigenous development

Continuity in ceramics, architecture, and settlement location strongly suggests a local development of the BMAC in Margiana. In addition, in Period 2 there are two sources of outside influence that must be considered:

1) The occurrence of steppe nomadic artifacts inside building complexes in Margiana attests to interaction with Andronovo nomads from the eastern steppe. It is possible that these nomads could have introduced new stylistic traditions to the area. However, steppe material in Margiana is rare, and the new motifs which appear in Period 2 relate to the oasis environment itself (snakes, scorpions, boar, etc.) rather than to the steppe nomadic traditions.

2) The distribution of the BMAC outside of Central Asia indicates a wide expansion. People from Bactria and Margiana were in contact with the greater Indo-Iranian

region from the Indus valley to western Iran and perhaps beyond. Burials found well outside of Central Asia which have exclusively BMAC goods, including ceramics, are evidence for the contacts of Central Asian people, perhaps involved in acquiring raw materials, with contemporary cultures to the South. However, in Margiana itself neither in Period 1 nor in Period 2 is there evidence of foreign styles or imported objects from the South.

Despite the contacts with nomads to the north and with contemporary Bronze Age cultures to the South, the emergence of the new style in Period 2 appears to be an indigenous process of development rather than the adoption or importing of an ideology or art style. The lack of finished imported objects and the occurrence of imported raw materials are characteristic of an extractive, expansionistic system comparable in structure to the 'imperial' expansion of the Uruk (Algaze 1989, Hiebert and Lamberg-Karlovsky 1992).

Along with the social and economic changes which occurred in the desert oases, there were changes in culture such as ideology and religion (and possibly language). Such changes are reflected in the artistic depictions, ritual objects, and figurines found in Margiana and Bactria in Period 2. While the architectural revolution took place in Margiana in Period 1, the ideological revolution evident in the iconography of axes, figurines, seals, and amulets happened in Period 2.

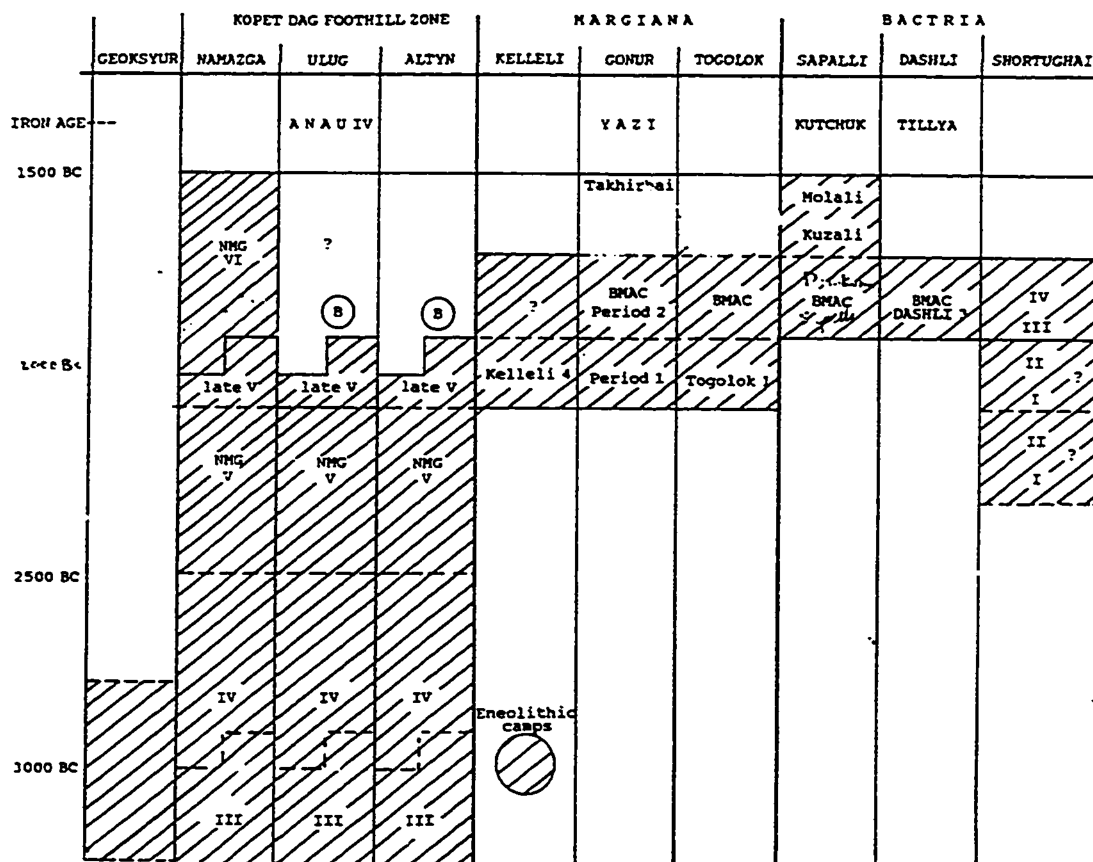
CHAPTER 10

CONCLUSIONS

In this chapter, I place the development of the Margiana oasis culture in the context of the Central Asian foothills. I show the developmental trends which underlay the emergence and development of the distinctive Margiana oasis culture and suggest why and when the BMAC emerged.

Trends and Traditions in Central Asian Culture History

Many explanations have been proposed for the widespread distribution of Bronze Age oasis settlements in Bactria and Margiana. These include migrations from the Iranian plateau originally emanating from Mesopotamia (Sarianidi 1987b), evolution from the Baluchistan tradition (Jarrige 1989), nomadic incursions (Alyekshin 1980), migration from the southern Turkmenistan foothill zone (Biscione 1977), and continuous growth of a local population in the oasis areas (Udemuradov 1988). Reevaluation of the sequence using the new data from Margiana does not support any of these suggestions. I suggest a colonization from the urban states of the Kopet dag foothills followed by the local development of the BMAC culture in Margiana and Bactria.



(B)= BMAC Burials

Figure 10.1: The chronology proposed for Central Asia is based upon the following: Geoksyur- (Khlopin 1964); Namazga- (Masson 1957; Dolukanov, Schetenko, and Tosi 1985); Ulug- (author's observations); Altyn- (Masson 1981, Udemuradov 1987); Kelleli, Gonur, Togolok- (this study); Sapalli (Askarov 1977, author's observations); Dashli- (Sarianidi 1977, 1990); Shortughai- (Francfort 1989).

The chronology presented in this study

Figure 10.1 presents the chronology for Margiana, the foothills of southern Turkmenistan, and northern and southern Bactria. The ceramic chronology as originally presented by Masson (1956) is based on designs on painted ceramics (Piankova, nd). Often the main changes in ceramic designs do not correspond with important cultural changes documented from other aspects of the material culture.

In fact, four important transition points in the chronology of Central Asia do not coincide exactly with the ceramic chronology. These include the late Namazga III Period, with the expansion of occupation to Geoksyur, long distance trade, and the development of symbols of administration. The second shift comes in late Namazga IV, with a shift towards craft specialization, social hierarchy, and monumental architecture. The third transition is late Namazga V with the development of urbanism and colonization of Margiana. The final transition considered here is the development of the Bactria-Margiana archaeological complex, at the beginning of Namazga VI (Figure 10.2).

ESTABLISHMENT OF THE CENTRAL ASIAN PATTERN

By the second half of the fourth millennium in Central Asia (late Namazga III and early Namazga IV), settlements based on dry farming were located in the central and eastern foothill zone, and settlements based on irrigation

	PRE- NMG III	late NMG III	late NMG IV	early NMG V	late NMG V	MARGIANA OASIS CULTURE Period 1	Period 2
Sheep/goat, wheat/barley village agriculture.......	--						
Irrigation..	foothill	simple oasis	foothill	foothill	foothill	Complex oasis	
Trade items brought in............................	small objects	raw mat	small objects	trade items	small objects	small objects	raw mat
Contacts..		wide Indo-Iranian	few	Indus	local oasis	local oasis	wide Indo-Iranian
Site size.. (from Kohl 1984)		.6-5ha	5-20ha	5-20ha	5-50ha	.5-15ha	.5-15ha
Stone handled disks, lamps........................		⊢---					
Terracotta animals and carts......................		⊢---					
Stepped motifs....................................		⊢--ceramics-->	⊢--stone objects------------>				seals>
Stamp seals.......................................		------			⊢------------------------->		
Terracotta human figurines........................		sitting	flat----------------------------------->				
Fortifications....................................			⊢--------------------------------------->				
Status differentiation in burials.................			⊢--------------------------------------->				
Specialized production areas......................			⊢--------------------------------------->				
Fast wheel ceramics...............................			⊢--------------------------------------->				
Undecorated ceramics..............................				⊢------------------------------>			

Figure 10.2: Trends in Central Asian culture history

agriculture were located in the Geoksyur oasis. In both areas, the simple settlement pattern and undifferentiated burials are typical of village level agriculturalists.

Traditions of Central Asian motifs

Many of the typical Central Asian symbols such as geometric step and cross patterns and zoomorphs or animal images are found on the painted ceramics from the sites of Geoksyur and Kara depe. These images are similar to those which appear on other media such as bronze seals during the later Bronze age of the foothill and the oasis. The beginning of the local exploitation of alabaster and steatite stone to make lamps, handled disks (loom weights), and seal-amulets with geometric designs are found in these settlements. Terracotta human figurines, terracotta model carts, and animal figurines are also found for the first time in late Namazga III/early Namazga IV (Masson 1961, Khlopin 1964, Kuzmina 1980).

Early oasis adaptations

Farming in deltaic fans was practiced in the Geoksyur sites of the Tedjen River delta. The Geoksyur sites were located outside of the dry farming belt and required a simple irrigation system for agriculture (Khlopin 1964, Lisitsina 1978). The seasonally stable discharge of the Tedjen River did not require long canals or complex

irrigation systems. Late Namazga III/early Namazga IV Period simple irrigation systems around the Geoksyur sites consisted of parallel canals from a major branch of the delta drainage. Only one or two settlements occurred on each canal system. Thus, the ability to transform areas outside of the dry farming belt through irrigation was known 1000 years before the development of irrigation in Margiana.

The occupation of Geoksyur sites have other parallels with the Margiana occupation: like the oasis areas of Margiana and Bactria, the Geoksyur oasis lacked important natural resources. The Geoksyur sites provide evidence for the first extensive relations with distant areas, bringing imported materials to Geoksyur. For example, metal objects were made from imported ingots, and even Indian ocean shells were imported for the production of bangles (Khlopin 1964). This pattern is similar to the way craftsmen in the later Margiana sites imported raw materials such as metal ingots and shell.

The network for acquiring raw materials is reflected in the ceramic parallels between the Geoksyur oasis, Baluchistan [Quetta (Piggott 1950), Mehrgarh Period 3 (Jarrige 1989), and Damb-Sadaat 2-3 (Fairservis 1975)], Sistan [Shahr-i Sohkta I (Tosi 1973)], south Afghanistan [Mundigak Period III (Casal 1961)], and in the Zerafshan valley [Sarazm, levels 1 and 2 (Isakov and Lyonnet 1988)](Figure 10.3). The connections between Geoksyur and

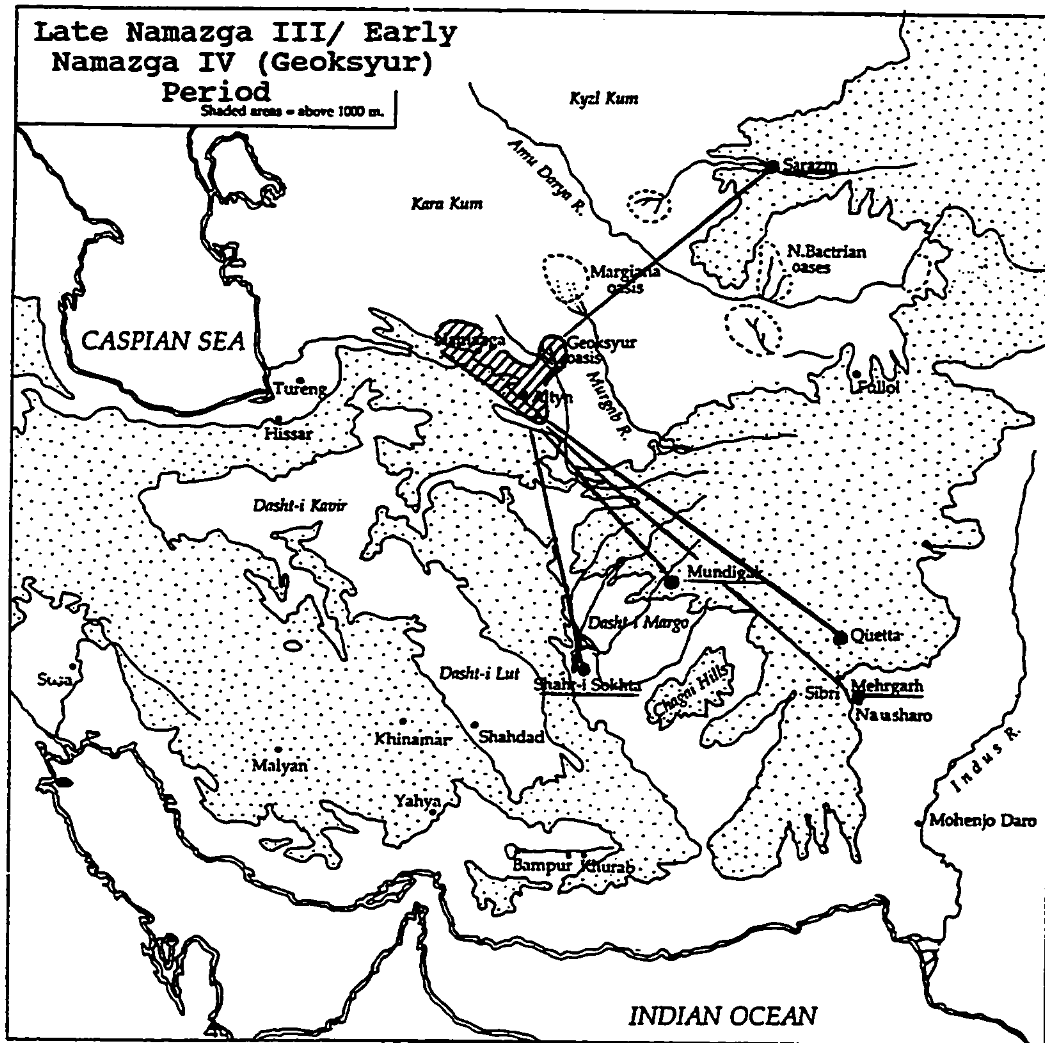


Figure 10.3: Namazga III-IV (Geoksyur) period

distant areas to the south are primarily reflected in the sharing of motifs on locally produced ceramics. This strongly suggests reciprocal exchange, which is fundamentally different from the later interaction pattern where actual BMAC items were exported from Central Asia and few finished objects imported.

Ceramics and small find assemblages from Sarazm, however, have very close parallels to material from the Geoksyur sites (Isakov and Lyonnet 1988). Actual importation of the ceramics from Geoksyur is suggested. Small camps or deflated sites in Margiana (Masimov 1979) suggest direct contact between the Zerafshan valley (Sarazm) and the Geoksyur oasis (Masson 1989).

Thus, the late Namazga III/early Namazga IV Period is of considerable importance for it indicates the first extensive interaction with distant regions, particularly the Indo-Iranian borderlands. It is important to recognize that both the production of finds from exotic materials and long distance interaction were already characteristic of southern Turkmenistan at the end of the fourth and beginning of the third millennium. However, the simple Late Namazga III settlement pattern and lack of site hierarchy indicates a different scale of social complexity from that which characterized the BMAC. It is quite likely that the Geoksyur occupation was so short because groups were unable to maintain the canals. The absence of a complex enough

social structure to maintain the canals may have contributed to the abandonment of the area.

ORIGINS OF CENTRAL ASIA BRONZE AGE TRADITION

While the pattern of resource exploitation, regions of interaction, and the iconographic motifs characteristic of 'Central Asia' begin in the late Namazga III Period, the types and forms of ceramics, seals, figurines, tokens, etc, came only with the late Namazga IV Period.

By this time, the Geoksyur sites were abandoned, except for the isolated site of Khapuz depe (Masson and Sarianidi 1972). In the foothill zone, there was apparently an increase in the number of sites, probably reflecting the incorporation of the former Geoksyur population (Kohl 1984). Long distance interaction between the Upper Zerafshan and the foothill zone ceased after the early Namazga IV, but sites in both areas continued to be occupied (Besenval and Isakov 1989). The lack of ceramic parallels with other regions and imported objects suggest a much reduced interaction network (Figure 10.4).

By the late Namazga IV Period the following features of foothill sites are first documented: the earliest occurrence of specialized production areas (Masimov 1970; Masimov 1976), fortifications on the outer perimeter of the settlements (Masson 1968), and status differentiation of individuals in burials (Alyekshin 1979; Masson 1981). These

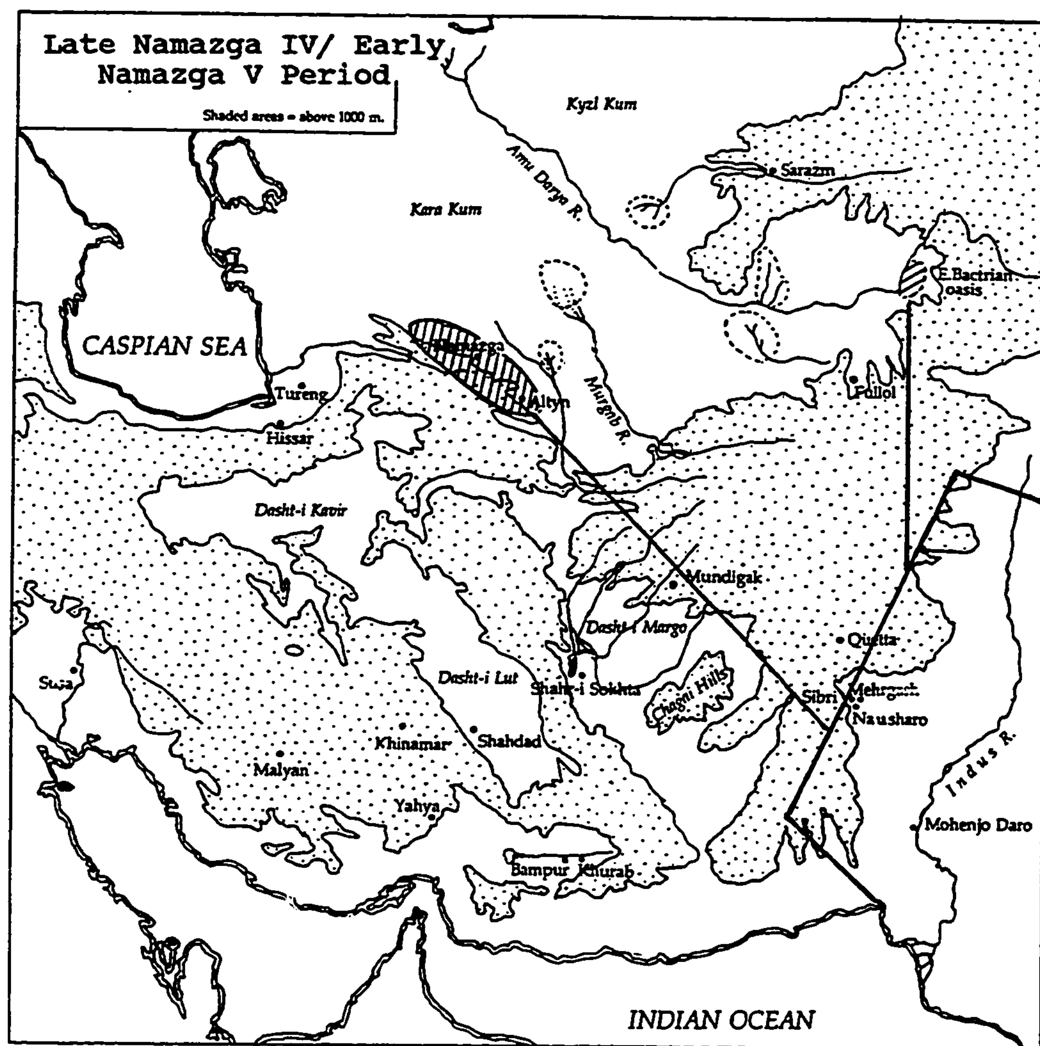


Figure 10.4: Late Namazga IV/ Early Namazga V period

factors may indicate the emergence of state level society (Kohl 1984).

Specialized production includes the local manufacture of copper alloy objects with shapes typical of the middle and later Bronze age: metal vessels, pins, earrings, chisels and punches. Stone objects were locally manufactured including steatite and alabaster biconical beads, alabaster pots, and geometric stamp-seals similar to those from the Margiana assemblage. It is difficult to differentiate these from the Namazga V and BMAC small finds when they are found out of excavated context.

Flat violin shaped terracotta female figurines, typical of Namazga V, are first found in late Namazga IV levels. Similar figurines are seen outside of the foothill zone in Margiana Period 1. It is possible that the wide distribution of these distinctive figurines represents shared political identity in addition to cultural identity between the two regions.

The Central Asian Bronze Age ceramic tradition

The most distinctive development in the late Namazga IV Period is the beginning of pottery made on a fast wheel. The carinated forms characteristic of all of the Central Asian Bronze Age ceramics (with fine geometric painted designs) become common during Namazga IV.

The transition to the fast wheel is clearly documented

at Altyn depe in the successive excavation horizons 4-8 (Masson 1988 p.23 table 1). The late Namazga IV ceramics (Altyn depe Levels 4-5) were almost entirely made on the fast wheel, and the forms of the ceramics have the distinctive carinated side and vertical lip rims which characterize the forms of the "Central Asian ceramic tradition." The development of the fast wheel as a technology and the manufacture of pottery in specialized quarters implies the emergence of a mass produced ceramics most likely made by specialists.

The wheel made ceramics of the late Namazga IV, early and late Namazga V, Namazga VI, the Bactrian and Margiana Bronze age oases areas share some overall characteristics of form:

1. The open forms, (Margiana types 2.A) which include vases on pedestal bases and trumpet shaped cups of all sizes. Both types 2.A.2 and 2.A.3 (vertical lipped and incised rim forms) are found as early as late Namazga IV.

2. Large closed pots with a concave moldmade base are also first found in late Namazga IV. These forms by definition are made on a wheel and reflect a manufacturing technique which continues until the end of the Bronze Age ceramic tradition in Central Asia.

3. Jars generally have a medial carination and are called "bi-conical" jars. These range from sharply carinated to rounded in a general trend through time.

4. Ceramic pot stands (podstavki) are found in both the Central Asian tradition and in the Indus valley ceramic tradition. These ceramics appear to be used both for the manufacture of the concave base of the large closed pots, and also used as the stands for these vessels.

These generalizations of the ceramics of the fast wheel tradition of Central Asia (which I call the 'Central Asian Ceramic Tradition') have broad similarities to the Indus valley ceramics which appear to be parallel developments. The similarities in the two regions' wheel-made ceramics (pedestalled bases, mold-made bases, and podstavki), indicate long term interaction with South Asia during the entire period of cultural development in Central Asia. The possibility that they shared similar sources in the late Namazga IV or early Namazga V Period is a topic worthy of future investigation.

THE 'MATURE' BRONZE AGE OF CENTRAL ASIA

The first occurrence of unpainted fast wheel ceramics so typical of the desert oases of Margiana and Bactria is in the early Namazga V Period in the central and eastern foothill zone at sites such as Shor depe (Schetenko 1970; Masimov 1978), Namazga depe (Masson 1957), Altyn depe (Masson 1981) and Ulug depe (personal observations).

The ceramics often have a sharp carination on the shoulders and rim, and are often considered "elegant" in

shape with their distinctive forms. The forms of the ceramics are very standardized, most likely indicating a high degree of craft specialization, especially in comparison with the earlier handmade ceramics.

Two chronological phases of Namazga V ceramics are particularly well documented at Altyn depe where extensive Namazga V deposits have been excavated (Masson 1967,1970, 1977; Masimov 1970).

The early Namazga V sites of the foothill zone are dense settlements with differentiated quarters. At both large and small sites the architecture is similarly compact with multi-roomed houses, long alleys or corridors and courtyards (Schetenko 1970). These sites are better characterized as large agglomerated villages, since there is no difference in the structure of the settlements between the large sites and the small sites.

The regional interaction of the early Namazga V appears to be a continuation of the late Namazga IV pattern with a limited regional network. The occurrence of isolated exotic small objects in the absence of other evidence of contact is more indicative of a pattern of "trickle trade" than of culture contact (Beale 1973).

The early Namazga V Period deposits at Altyn depe include imported (or imitated) mature Harappan artifacts (Masson 1977, 1988). The small seals, beads and ivory sticks appear to be trade items, and if not made in the Indus

valley, they are of a type at least foreign to the Central Asian small find tradition. While the early levels of the Harappan outpost of Shortughai are contemporary with the early Namazga V (Possehl 1989), it must be noted that ceramic parallels between Altyn and Shortughai for this period are negligible.

Late Namazga V

Late Namazga V is a critical period in the development of Central Asian oases cultures because of two important 'events' in the foothill region. First, during the late Namazga V, several extremely large and dense settlements emerge with all of the indicators of 'state' level urbanism (Figure 10.5). Second, at the end of the late Namazga V and the beginning of the Namazga VI Period, the large dense settlements are abandoned, and the oases areas both in Margiana and Bactria are widely occupied.

During the late Namazga V Period, Namazga (50 ha) is the largest site in the central foothill zone, and Altyn depe is the central site in the eastern zone (25-26 ha). The architecture at both sites is distinctive with multi-roomed houses, courtyards, and narrow streets (Masimov 1976; Masson 1981).

Based upon the excavations up to 1980, it has been commonly reported that the late Namazga V occupation at Altyn depe (level 0-2) was restricted to small area of the

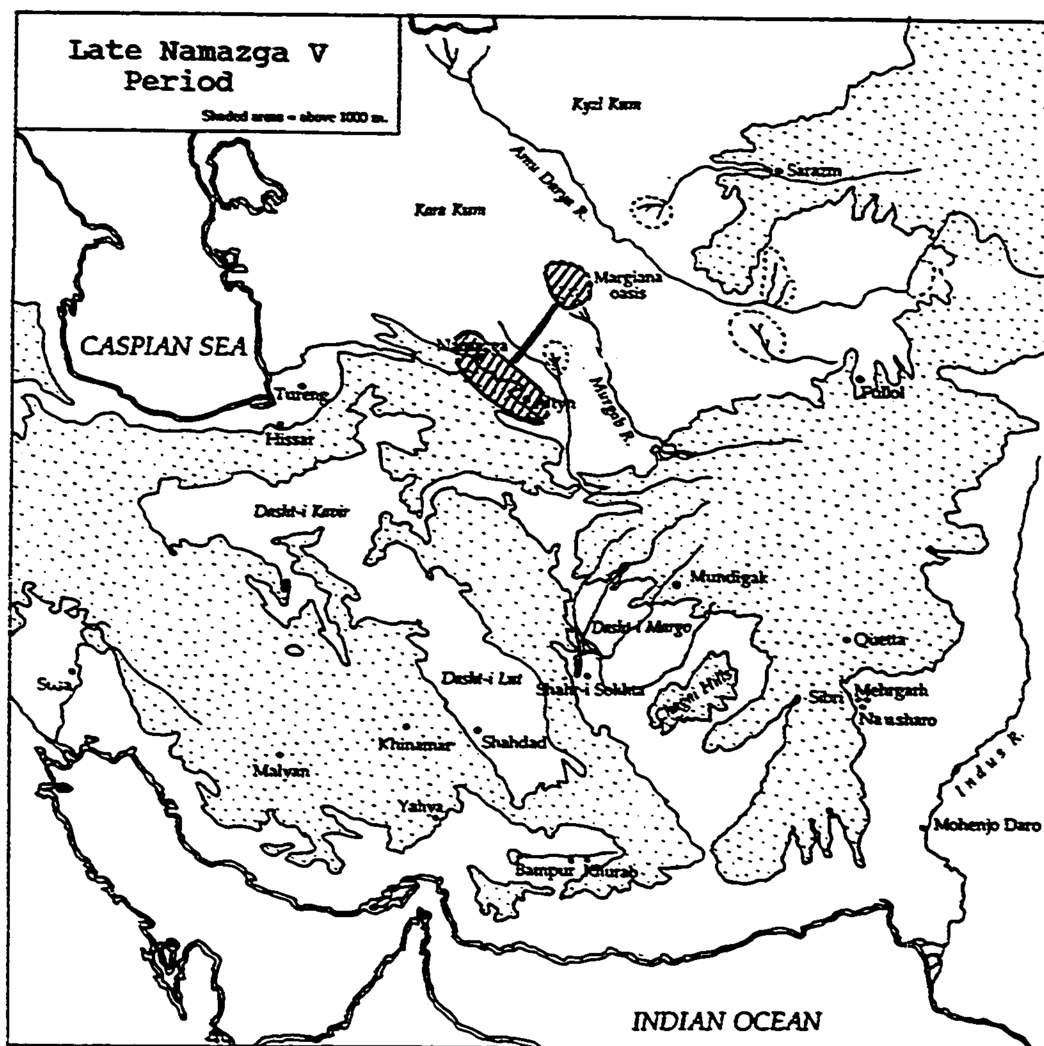


Figure 10.5: Late Namazga V period

site (Masson 1981, 1988). Since the early 1980s excavation at Altyn depe has been focused on the final phase of occupation, and the area of occupation is now clearly extensive, if indeed the most extensive of the Namazga V Period. Areas of late Namazga V include potters quarters (Excavation 10), monumental architecture (the upper levels of excavation 7), and large areas of domestic arcnitecture (excavations 9, 13, and 16). The widescale excavation of levels of this period permits the characterization of these large sites as "cities" in the sense of the definition of cities in the Near East (Childe 1953, Adams 1981, Masson 1989).

Evidence of a food production crisis?

It appears, now, that the late Namazga V Period represents the largest extent of urban settlement in the foothill zone and the sites grew to larger sizes than they ever had before. Future research should focus on the possibility that the sites exceeded the carrying capacity of the agricultural land around them. The rivers of the foothill zone do not allow irrigation since their discharge is too small. Agriculture is restricted to dry farming with limited liman irrigation. Contrary to the evolutionary perspective on agricultural systems proposed by Lisitsina (1978), no other complex irrigation system developed in the foothill zone until the later introduction of the qanat

system of underground canals -- a development which followed the mid-first millennium BC.

The refined chronology from the foothill sites (Udemuradov 1987) may make it possible to examine this suggestion of limited prehistoric carrying capacity. We can suggest that, given a crisis in food production in the foothill sites, the long-known richness of the desert oases would seem very attractive. People from the foothill sites would then invest the energy necessary to clear the land and settle there.

There may be a correlation between the depopulation of the urban foothill sites of the Kopet dag at the end of Namazga V and the origins of widespread occupation in Bactria.

NAMAZGA VI

The Namazga VI Pericd in the foothill zone is found at very few sites, and where it is found, the occupation is very small. Typically this situation has been referred to as a "de-urbanization." A shift from large site to small site occupation has been suggested (Biscione 1977). Migration out of the foothill zone has also been suggested (Masson 1989). Most likely what is called "Namazga VI" is a regionally restricted ceramic assemblage found only at Namazga depe and Anau. There is no evidence of any interaction between Namazga VI of Namazga and Anau and what

has been called "Namazga VI" in Margiana.

Other sites which are considered to have Namazga VI levels (Yangi-kala, Ulug depe and Altyn depe) yielded "Namazga VI" materials from burials which have more parallels with the Bactrian-Margiana ceramics and small finds than with styles from Namazga depe. Excavations at a site such as Anau could resolve questions of the nature of the foothill Namazga VI. Few of the other large sites of the foothill region have any Namazga VI occupation, and there appears to be an abandonment of the large site of Altyn depe.

THE ORIGINS OF OCCUPATION IN MARGIANA: PERIOD 1 (2100-1900 BC)

Late Namazga V materials are found widely in Margiana, covering an area of approximately 3000 square kilometers. It is important to emphasize that the initial occupation of Margiana occurred at the same time that the foothill site of Altyn depe was in its largest urban phase.

Colonization

Margiana was colonized simultaneously over a large area. Similarities in the ceramics, small finds, and architecture between the sites of Period 1 suggest that these building complexes were built in a single period. The cultural tradition of the colonists appears to have remained very close to the foothill culture during Period 1 in Margiana.

The ceremonial objects such as the figurines and the range of types and forms of ceramics, tools, and weapons is indistinguishable from those from the contemporary urban settlements of the foothill zone. However, based upon analysis of the ware of the ceramics and the paste of the small figurines, these were not being exchanged.

We have no reason to think that Margiana was 'discovered' at this time. The evidence from Sarazm of contacts with the foothill sites from Namazga III times and the scatters of pre-Period 1 sherds in Margiana indicate that the Murgab River delta of Margiana was known, even if it was not considered a worthwhile area for settlement. There must have been a point reached in the foothill occupation when the potential involved in investing in the opening of a new area became greater than the risks.

New agricultural systems

The first hurdle in occupying Margiana concerned the clearing of the thickets and the cutting of irrigation canals. The second hurdle was the shift from dry farming to irrigation and a reversed growing season. The settlement pattern suggests a pattern of large canals, dams, and levees characteristic of agriculture in the oasis form this time onwards. This man-made oasis environment strongly altered the ecology of the delta. The ethnobotanical record of weed seeds and grains typical of irrigated fields provides

evidence for this disturbance from the earliest levels of the deep sounding at Gonur.

Pioneer architecture

The compact multi-room houses, corridors, and alleyways of the foothill sites appear structurally distinct from Margiana's pattern of domestic structures with shared courtyards packed into a fortified building complex. The new Margiana settlement plan does not reflect the organization of the foothill zone but is something completely new for the region and for Central Asia. These settlements appear to be spaced to maximize the agricultural potential of the canals. Settlements remain isolated in comparison to the contemporary urban settlements of the foothill zone.

THE BMAC OASIS CULTURE: PERIOD 2 (1900-1700 BC)

By 2000 BC, both Margiana and southern Bactria were occupied by cultures using irrigation agriculture and constructing large fortified building complexes. In Margiana, occupation continued within the oases at Kelleli, Gonur and Togolok, although the location of the building complexes shifted enough between first and second periods so that few Period 2 structures directly overlay Period 1 structures. The duration of this second period in Margiana is not clear, since there are no post-BMAC radiocarbon dates, but the BMAC sites may have been occupied for about 150-200 years.

The Period 2 ceramics are clearly continuous from Period 1, with small changes in existing forms and a few new, distinctive but rare shapes. The difference between the two assemblages is clear enough to be able to differentiate the grave assemblages associated with the BMAC in Margiana.

Period 2 is distinguished by new motifs on steatite amulets, distinctive compartmented copper alloy or bronze seals, handled cylinder seals, and the rich metal and stone assemblage referred to as the BMAC. This includes ceremonial axes and small vials, but not the violin shaped figurines which no longer are made.

Cultural continuity and transformation

The shift from Period 1 to Period 2 in Margiana is most clearly seen in the emergence of a new set of symbols found on seals, metal, stone, and terracotta objects. Apart for these signals of social change most of aspects of the assemblage show continuous occupation by a single population and do not support migration or replacement. First, the settlement and architectural pattern remains fairly constant, although it is possible that the building complexes become better fortified. Stratigraphically, the deep sounding at Gonur shows deposition without any clearly defined break. The ceramics of Period 1 and Period 2 are so similar in ware and shapes that these periods can be distinguished only when assemblages of forms are studied. The categories of imported

objects and small finds are similar from Period 1 to Period 2. All of these indicators appear to point to the local growth of Period 2 from Period 1.

Secondly, social identity appears to be transformed in Period 2, with the development of the shared BMAC culture. The oasis adaptation spreads to similar deltaic oases in northern Bactria and southern Bactria. The new aspects of Period 2 iconography often relate to the desert environment: snakes, scorpions, boar. Objects such as axes and maceheads which were used earlier are transformed into ceremonial objects. Miniature columns, staffs, and maceheads are found in new contexts, indicating perhaps that they are being reinterpreted in the oasis culture. There appears to be an emphasis on the materials of the imported stones, which leads to the deliberate juxtaposition of exotic materials, such as alabaster and steatite.

The new oasis system includes a reorganization of production to craft activities occurring within the qala and the finishing of distinctive objects on exotic materials, such as imported stone and metal. Bullae and cylinder seals are used in Period 2 indicating a sophisticated control of exchange. Sealings on ceramics may indicate control of production as well.

The Qala and the Khan

The long term growth of social complexity in the foothill zone of southern Turkmenistan led to state level society in the mid- to late third millennium (late Namazga IV-V). Evidence for this rests on the compact, walled urban sites with monumental architecture and burials showing social and economic hierarchy. The social organization of the Margiana colony is more difficult to classify and cannot be placed in the tribe-state-empire political framework (Fried 1967).

The initial occupation of Margiana was very complex and well organized. It is interesting that while the settlements of Margiana Period 1 are fortified, there must have been a high degree of communication and information flow between them. This is reflected in the successful agricultural and irrigation systems as well as by the uniformity of material cultural over the area of Margiana.

If this study focused primarily upon the production of ceramics and locally manufactured items, the high degree of standardization and quality of manufacture would strongly suggest a state level society. The foothill state level society has almost the same set of ceramic forms and technology. If production is used as a measure of socio-political complexity then one would have to assume that the foothill sites and the Margiana sites had similar levels of complexity.

The exchange of exotic materials presents a different picture of economic and political complexity: the pattern of exchange is entirely one sided, since few finished objects are brought in, although raw materials are imported and consumed. If Period 2 is considered, the pattern of exchange of one area dominating surrounding areas is most characteristic of empires.

If any one of these characteristics (settlement pattern, architecture, production, exchange) of the Margiana oasis is taken as the focus of analysis, then an argument can be made for a certain general category of socio-political organization. Taking all of these factors into consideration, a new organization can be proposed on the basis of local historical analogy.

From the initial occupation of Margiana, large fortified building complexes contained several household units. These isolated complexes are easily compared to the traditional qala. Qala of Afghanistan and of medieval Merv were a type of feudal agricultural manor. Tabari described the organization of medieval Merv as containing dispersed villages grouped around qala, and bound by 'feudal bonds' to the head of the qala, or dikhan (Encyclopedia of Islam 1988:619). The dikhan controlled his lineage and fields around a single branch of the canal. These dikhan paid tribute to a regional khan, who maintained canals and controlled production and the obtaining of a considerable amount of basic materials (stone, metal,

etc.). The Bronze Age buildings can be best compared to the qala architecture and may reflect the origins of a system of landlord khans.

One suggestion for the emergence of this system in Margiana is that, in Period 1, the dikhan were still subservient to the leaders of the foothill zone. In Period 2, the emergence of an independent oasis culture could reflect the emergence of a khan in Margiana. Well-fortified citadels are found both in Margiana Period 2 (Togolok 21) and in southern Bactria (Dashli 3- round building), which can be compared to later khanate architecture of the ark.

This system of khans and qala is a political and economic pattern that works well in the oasis environment. Once this pattern is established, it remained in place until the development of long-distance trade which concentrated power in the hands of the merchants at the expense of the landed dikhans.

With the introduction of Near Eastern city structure to the region in the 11th and 12th centuries AD, the social structure changed abruptly. For the first time in Margiana, there was a dichotomy between the urban center and the rural areas. In the development of medieval Near Eastern urbanism, the sources of wealth shifted from agriculture to trade and property in the town. The two systems waxed and waned depending on the personal power of the current local khan.

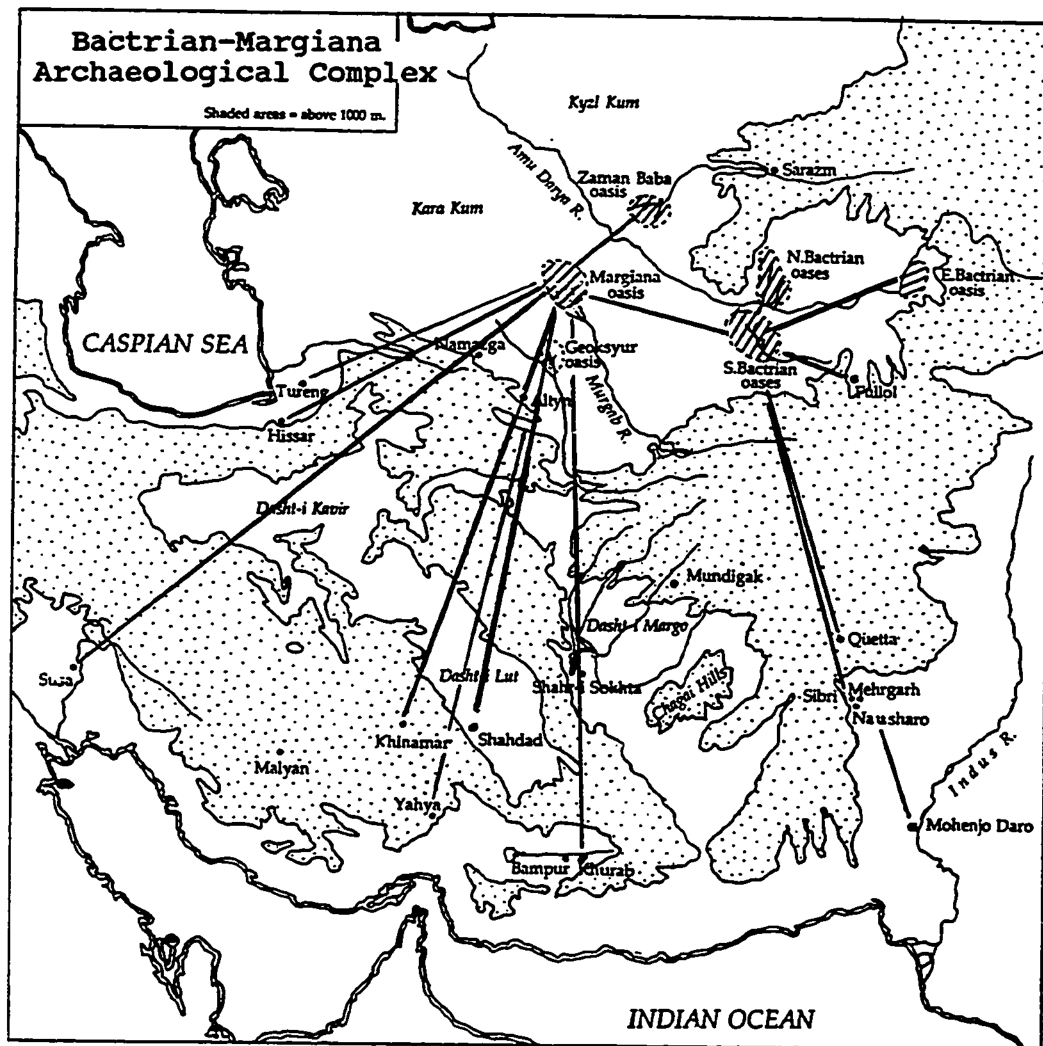


Figure 10.6: Bactrian-Margiana Archaeological Complex

Expansionism

Sarianidi (1990) argues that Margiana was settled from the region of eastern Iran, based on a late chronology for Margiana. With a corrected chronology and a clear antecedent for the BMAC in Period 1 in Margiana, it is possible to flip the "center" of the BMAC "okione" to its real home in Central Asia. Most of the BMAC artifacts in Iran are found in contexts which are contemporary with the BMAC in Margiana. The BMAC objects are exotics in the context of the local assemblages. I would suggest that the interaction with southern Iran (Khurab), northern Iran (Hissar), and south Asia (Mehrgarh) is an expansion in quest of resources (Figure 10.6). Raiders or traders from Margiana clearly interacted with the distant cultures. Towards the end of the BMAC time period, urban settlements to the South were dramatically reduced in settlement size. While this has often been attributed to environmental change or migrations, it is possible that the BMAC people raiding and trading on the Iranian plateau and on the borders of the Indus valley also had a destablizing effect on those urban cultures.

The end of the Bactrian-Margiana Archaeological Complex

The latest BMAC levels at Gonur south were abruptly abandoned. Unbaked ceramics lay next to the kilns, precious grinding stones were left, and no further examples of the BMAC assemblage are found in the Murgab delta. Later

occupations (Takhirbai Period, Yaz I, II and III) are further to the south in areas which apparently had not been occupied during the Bronze Age. Unfortunately, many of these sites have been destroyed during land reclamation or have been unavailable for archaeological study. At the largest Iron Age site in Margiana, Yaz depe, no Bronze Age material lies beneath or nearby; this is clear from the widescale excavations (Masson 1959) and in my recent stratigraphic excavations (Hiebert, unpublished materials).

CONCLUSIONS

It is possible to outline a series of artifacts and images found in Margiana which are very similar to later Iranian objects and symbols. One of the great problems in the study of the archaeology of Central Asia has been that these stylistic parallels have been used to cross date settlement in Margiana. The interpretation has traditionally been that these sites were contemporary or that Margiana was slightly later. In this attempt at independent dating using radiocarbon determination and detailed comparison of ceramic assemblages, it is clear that Margiana pre-dates these distant stylistic parallels by several hundred years.

The origins of the oasis identity in the BMAC provides an example of how culture change occurs within the context of ecological and technological constraints. I have tried to show that the development of the BMAC was not due to a shift in the settlement, technology, or adaptation and that it is

not possible to suggest an role for outside influence. Rather I see a two-stage development. First, there is an revolution in settlement and architecture and the establishment of a successful farming and herding adaptation in the Namazga V colony from the foothills. Second there is the development of an independent culture and its spread to other deltaic fans in the desert region, notably in northern and southern Bactria.

Finally, one aspect of the Margiana oasis culture is its expansive nature, as seen in the BMAC. This expansion was probably due to the quest for raw materials. Long distance resource procurement also occurred during the occupation of the Geoksyur oasis and this suggests a correlation of oasis occupation and expansionism.

Following the abandonment of the Bronze Age oasis sites of Margiana, the next important occupation of the Margiana oasis is farther to the south during the first millennium BC. The oasis only becomes prominent again with the founding of Gyuar kala during the early Parthian Period. During this period there is a reestablishment of oasis agriculture with widescale occupation in Margiana (Nikitin and Sogomonov 1982). This period also coincides with the first major period of caravan trade from China to the Roman world. It is important to acknowledge that the need for imported materials in the oases played an important (possibly fundamental) role in the later development of long distance overland trade.

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